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THE HUNTERIAN ORATION,

PRESIDENTIAL ADDRESSES,

AND

PATHOLOGICAL & SURGICAL WRITINGS:

BY

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IN TWO VOLUMES.

VOL. I.

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PREFACE.

These volumes consist of a collection of miscellaneous writings, for the most part scattered through the Transactions of Medical Societies, and the Medical periodical Journals, and relating chiefly to a considerable number of pathological and practical subjects. As their publication commenced so long ago as the year 1828, it is obvious that the Author's subsequent experience and investigations, and the more recent researches of other persons, must have modified and corrected a large portion of his pathological views and clinical doctrines, and of the practice recommended when the papers were written. The Author has sometimes thought of revising and adding to some of the lectures and observations by the light of more recent discovery, and of thus combining modern experience with the results of what he has himself witnessed during many years of hospital and private practice. But he has always been deterred from such an undertaking by the consideration, not only that it would be too laborious, but that it would be so imperfect and entangled a method of treating so great a number of subjects, as to necessitate a complete re-writing of the greater part of the papers here brought together.

The reader is therefore requested to observe the date of the publication of each paper, and to accept the work as a simple record of the Author's contributions to pathology and surgery

of such knowledge as he possessed when each was written; not as a description in every particular of his present views, nor of what he would recommend in detail for practice at the present time. Nevertheless, he is not without some hope that in endeavouring from time to time to lay the results of his experience before his pupils and his professional fellow-workers, his labours may have been in their time not wholly without their use, though much of what he has written may now belong to the past.

The history of the past, however, has some value in science as in other subjects, and as the collection of his writings has not been without interest to the Author himself, as showing the successive steps by which progress has been made, and the singular changes which practice has undergone, (greatest of all, perhaps, in respect to the use of bleeding in accident and disease,) he has yielded to the suggestions offered to him by some of his friends, that others also may feel some portion of this interest, if they are taken from the numerous volumes in which they are now scattered, and placed together in their present form.

C. H. H.

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THE

HUNTERIAN ORATION,

DELIVERED BEFORE THE

ROYAL COLLEGE OF SURGEONS OF ENGLAND,

ON THE 14TH OF FEBRUARY, 1849.

MAY IT PLEASE YOUR ROYAL HIGHNESS,* MR. PRESIDENT, AND GENTLEMEN:

"As a lasting mark of respect to the memory of the late Mr. John Hunter," this day, the anniversary of his birth, has been set apart for this meeting by his relatives, Sir E. Home and Dr. Baillie. But of one born in the year 1728, and removed from this scene of his labours fifty-six years ago, and made the subject of comment almost annually for the last thirty-five years,—what can possibly be said in elucidation of his character, and of the value of his scientific investigations, which has not been already rendered familiar to almost every one in this assembly?

None will refuse to recognize in Hunter's unrivalled museum an evidence of unwearied pursuit of knowledge, and of stupendous labour, almost incredible as the work of one man in the short space of thirty-five years;—few will hesitate to believe, on the concurrent testimony of all who are best qualified to judge by their own eminence in the same pursuits, that in the sciences of anatomy and physiology,—human and comparative,—he effected a kind of revolution, and first pointed out the true path by which alone the mysteries of organized beings in every department, vegetable and animal, can be unravelled:—no one who has sufficiently studied his works and mental powers, will refuse to Hunter a place among those bright luminaries of science, from whom, as from the more distant heavenly bodies, light may still continue to reach us, even for centuries after they have themselves become extinct.

* H.R.H. Prince Albert honoured the College by his presence on this occasion.

And thus, even with reference to these sciences, the last few years have added much to our knowledge of his real merits. The publication for the first time, in 1835, of a collected edition of his works, in which his opinions are ably illustrated by the comments of the persons most competent each in his respective path; and the republication within these ten years of the physiological catalogue of the museum, with much labour and zeal for his character, on the part of our distinguished Conservators;—together with the able remarks of some of those whom I this day follow,—*haud passibus æquis*,—have demonstrated how vast and varied a fund of original knowledge was actually possessed by him, in many points unsuspected, till brought to light by kindred minds, and explained by the advance of science since his time, and have shown that few men ever lived who could have declared with so much truth in so extensive a field,—

"Libera per vacuum posui vestigia princeps,
Non aliena meo pressi pede." *

And now, by the joint labours of yourself, Mr. President, and of our junior professor, Mr. Paget, within the last three years the catalogue of the pathological department of the museum has also been almost completed; —illustrated in the same spirit as the physiological, by extracts from Hunter's unpublished, as well as from his before known pathological writings; and calculated by the arrangement of the collection, to give to the latter an increased interest, by showing the very preparations he was accustomed to employ, when conveying instruction to his pupils by their means.

Hitherto the pathological department of the museum has not perhaps harmonized in importance and utility with the rest of the collection, though its merits were not unappreciated by a few select students. At present, however, by numerous purchases on the part of the College in the last few years, at an expense of nearly £4,000, and by donations from its members (far less numerous indeed than they will be hereafter, now that their utility is so much enhanced by classification and display),—the collection has become doubled in numbers and value, since the first brief catalogue in 1830, and may claim at least comparison with any other museum of this branch of science, if indeed it may not already boast of the same undisputed superiority which the physiological department possesses. And now by examination of Hunter's own preparations, explained in his own words, may be seen more clearly than before, how close was his attention to diseased function and structure, as well as to the natural condition of all organized beings.

And now, also, we are in a better position for answering the question which has often been proposed,—Granting his great eminence as an anatomist and physiologist, what has Mr. Hunter directly effected, as to the knowledge

* Hor. Ep. lib. i. 19.

or the treatment of disease, that surgeons always express for him so much admiration?

If even in this assembly there are some laborious surgeons, whose candid confession would be an acknowledgment that they had never studied the one greatest and most finished of his works,—it is the same also with all writings which are profound and full of research, which require much knowledge, and much application of mind in the reader also, to understand the conceptions of the teacher engaged in following out his subject in every possible point of view; and which perhaps excite some alarm at the apparent vastness of the labour in prospect, as when Hunter apologizes thus:—"I shall be a little abtruse in the present lecture, which I intend as an introduction to all animal matter."* Of such writings it must ever be, as was said by Bichat of the chief surgical works in Hunter's time, "One hundred pens retrace every day what fifty have borrowed before them from twenty others, themselves only copyists."†

Neither would a fair inference be drawn as to Hunter's influence on surgery, if it could be shown that some of his contemporaries are more often quoted even now than he is, in reference to practical surgery, and that they are even safer guides in some points of treatment; as, for example, when Hunter postponed an inevitable amputation to a remote period after an accident.

It would be easy, on the other hand, to enumerate many facts which were well known to him, of much interest and importance in the practice of surgery, but which were forgotten and overlooked till again discovered by other observers, after a lapse of considerable time, and at once, with all the force of novelty, indelibly fixed among the settled maxims of practice.

But it is not in such examples of correct observation in individual pathological or practical points that Hunter's merits lie, nor is it for them that all students in the science, rather than in the mere art of surgery, regard him as their great master.

The estimate of posterity has accorded with that which Mr. Abernethy mentions as the opinion given to him by Hunter himself of his own capacity, when irritated by the neglect or plagiarisms of some of his contemporaries:—"I know I am but a pigmy in knowledge, yet I feel as a giant when compared with these men."‡

Notwithstanding their great practical merits, we look in vain, even in Bichat's eloquent description of Dessault's surgical improvements, as we do also in the writings of Pott (each at the head of surgery in their respective countries in Hunter's time), for that constant reference to every

* Works, vol. i, p. 211.

† "Cent plumes retracent chaque jour ce que cinquante avoient emprunté avant elles, de vingt autres elles-mêmes copistes."—*Œuvres Chirurgicales de Dessault*, t. 1, vi.)

‡ Abernethy's "Physiological Lectures," p. 199.

part of anatomy and physiology, so conspicuous in Hunter; for that depth of thought and varied illustration which fix the attention and necessitate the exercise of the mind of the reader, in dwelling on the doubts and suspicions,—the half formed theories and hypotheses,—so thickly scattered through his writings,—many of which have been proved by further investigation, with increased collateral knowledge, to have been most sagacious anticipations of important facts.

Leaving to others the application of details, Hunter's constant aim, as he informs his pupils, was "to explain to them the principles of the art" of surgery;* and thus, by reasoning, and comparison, and analogy, to render them fit to cope with unusual and unforeseen difficulties. It was by enforcing these guiding principles, in a spirit of experimental research, that he contributed to effect a great and permanent change in surgery, pathological and practical, no less influential than that which he produced in physiology;—a change which is still felt unconsciously by every one who enters our profession, because silently actuating most of his immediate instructors.

Hunter himself complained, "Since I have lectured I have scarcely found a pamphlet without some of my opinions, and often my very language:" † and it is indeed the truth. Some of his immediate successors, thoroughly imbued with his spirit, successfully cultivated the science of surgery, and they have been the teachers of their profession; to Hunter's influence on their precepts, among many causes, are we, I doubt not, largely indebted for that impulse which has been given to surgery among us in the present century.

Nor is this spirit extinct among the members of this College; but I am precluded by the founders of this meeting from dwelling on the labours of many eminent followers of Hunter, because they still move within our observation.

It is my duty, however, to recall to the recollection of my audience the loss sustained by the Council, of whom no less than three "are deceased" since the last anniversary.

Two of these, Mr. Briggs and Mr. Callaway, afforded a remarkable contrast, physical and mental;—the latter, the active practical man, laboriously occupied in applying his skill for the benefit of a wide circle, by whom his kindness and open manners were extensively appreciated,—the former the shy, and modest, and retiring student, whose worth was known in a comparatively narrow sphere. Both held several public appointments, but by neither of them was the literature of the profession materially increased. Mr. Callaway, I believe, never published any paper connected with

* Works, vol. i. 208. † Ib. p. 210.

surgery. Mr. Briggs translated Scarpa's work on Aneurism, a subject which this Italian pupil of Hunter prosecuted with much ardour, derived, no doubt, from personal interest in the philosophical proposal of his great master for its cure.

Appreciating as I do, however, the zeal evinced a few years ago, by the Council of this College, for the cultivation of literature among its members, I venture to add that the Library then founded, and since increased at an expense altogether of above £14,000, was a subject in which Mr. Briggs took a very warm interest, and contributed not a little to its efficiency and usefulness.

The Library of the College now contains nearly 23,000 volumes, and is the most complete in the kingdom in every department of science relating to medicine; and although the possession of 2,500 volumes on natural history shows that its character is not solely medical, yet considering its purely scientific nature, the fact that the names of 5,808 visitors are recorded as having availed themselves of its advantages in the last year, demonstrates the justness of the opinion formed by the Council of the literary and scientific pursuits of its members, when such an opportunity as they here enjoy was afforded to them.

The third loss which the Council has sustained, is that of Mr. Samuel Cooper, whose surgical erudition has earned for him a wide reputation. Educated at Dr. Burney's, he began his professional studies exactly half a century ago, at St. Bartholomew's Hospital, to which institution he ever retained a warm attachment. Although staff-surgeon in the army, his public services, I believe, were confined to a brief period before the short peace of Amiens, and again after that great victory by which was purchased the longest peace that Europe has ever known.

Mr. Cooper occupied several high situations, and was for the last seventeen years surgeon to University College Hospital, where his great surgical knowledge, and his kindness and urbanity of manner in the duties of Professor of Surgery, procured for him the warm attachment of the students. He was also for many years an examiner of this College; and in 1845 he filled that highest office in its government, which you, Mr. President, now occupy. While yet a young man he published a treatise on the diseases of the joints, which had gained the Jacksonian Prize of the College; but his fame as a writer depends upon his great work the "Dictionary of Practical Surgery." Mr. Cooper himself remarks, "This book, imperfect as it is, has been a work of inconceivable labour;"* and in truth it presents an immense mass of

* Preface to third edition.

surgical information culled from every valuable source, not only among the older writers, but also from the best French, Italian, German, and American authors. It has been translated into the three former languages, and republished by our Transatlantic brethren, although they at one time complained that he had not done full justice to their merits.

In this country seven large editions appeared previous to the year 1838. During most of the thirty years preceding that period it formed the text-book of every surgical student, generally in conjunction with his "First Lines of Surgery," a work which also passed through several large editions, and professed to give, in a more simple form, the recommendations of his own experience. Both works are, however, already in great measure superseded by more modern manuals expressly adapted to the use of the inexperienced; because, although the dictionary will long continue to be consulted by surgeons as a kind of Bibliotheca Chirurgica, (which its author himself regarded as one of its most valuable objects,) the very richness of its references embarrasses the younger student, from the absence of any guiding voice between them.

Indecision from consultation of too many authorities is not, however, the modern tendency. The change that literature in general has undergone, in the last quarter of a century, has necessarily been felt in our profession. Compendiums and journals usurp the place of the ponderous tomes of antiquity; and among us perhaps, as elsewhere, some may be found of whom it may be said, that they

> "Pick up their little knowledge from reviews,
> And lay out all their stock of faith on news;" *

the apparent extent of prospect, of which they thus acquire the survey, concealing from them its superficiality.

But, on the other hand, I trust that the impulse which in the same period the advancing tide of knowledge has received, has also reached us, and that by no means an inconsiderable number have become more studious and more scientific; and that in the same manner as a great change was introduced by Mr. Hunter in the latter half of the last century, so within the last few years a change not less important has commenced, by which pathology and surgery will be as much advanced;—not now by the labours of a single individual, but by the concurrent efforts of a great number of zealous votaries of science; nor yet by precisely the same instruments, but in a similar spirit of experimental research and philosophical induction, over a still more widely extended field.

The great results which I anticipate in pathology and practice, both medical and surgical, are again to be derived in part from further researches

* Churchill.

into anatomy and physiology, by more minute and accurate examination of both the solid and fluid materials of animal and vegetable beings, and by having especial regard to that general anatomy of *tissues* which Bichat first raised into notice, but which is at present carried, by the aid of the microscope, and of organic and inorganic chemistry, to a far higher degree of refinement.

At one time some local point of anatomy is determined ;—for example, that reflection of the synovial membrane over the cartilage of joints, which this great physiologist saw only in imagination, is now proved, by tracing the epithelial cells really to exist in the fœtus, though probably only in fœtal life. At another, some single point of surgery, as when it is shown that the rare union of the fractured neck of the thigh bone cannot possibly be effected by means of the vessels of the round ligament, as was suggested by Sir Astley Cooper, because those vessels are reflected at their looped extremities, without entering the bone at all.

But it is in minuter and more general subjects that modern physiology and pathology are chiefly employed, and now promise to unravel and simplify some of the mysteries, and to explain in a different and more intelligible manner many of the functions of life ; digestion, respiration, secretion and excretion, nutrition and reparation,—are all presented to our inspection in a novel form, which gives fresh charms to physiological science, and which is of the utmost importance to clear views of morbid changes of structure and function.

I. The discovery of nitrogenized or albuminous principles in all vegetables has at once removed much of the mystery of the animalization of nutriment, and by showing that the conversion of vegetable substances, free from nitrogen, into albuminous matter for the support of animal life, is not required to be effected in the stomach, the process of digestion becomes more like simple solution and absorption.

Of little less importance towards our comprehension of the removal from the body of substances no longer required for its use, is the discovery of kreatine in the muscles, which constitute so large a part of all animal bodies, and out of which, as Liebig has shown, urea can be formed,—that subtle alkaloid poison, for the removal of which such constant and careful provision must be made in order to preserve life.

Above all in interest, is our knowledge of the power of absorption of gases by the blood, and especially of the influence of oxygen in the chemical changes, and removal from the body, of both its nitrogenous and non-nitrogenous elements ;—facts which have modified the doctrines relating to respiration and the production of animal heat, and to nutrition and absorption.

"No chemist on earth," says Mr. Hunter, "can make out of the earth a piece of sugar, but a vegetable can do it."* The modern chemist, however, in his laboratory can effect transformations, little less wonderful, of one organic product into another. He can convert starch into dextrine or sugar, by adding a little alkali to some pancreatic fluid; † or he can change his sugar into fatty matter, or butyric acid, by causing it to ferment with putrefying cascine.‡

Does not, then, the physiologist, with infinitely greater clearness and certainty, comprehend how many similar chemical conversions can be effected in the living body, in health or in disease, subject as it is to perpetual changes from the action of oxygen on its solid and fluid materials? —conversions, the previous obscurity of which has been in some measure explained by Mülder's law of chemical tendency, that is to say—the necessity for the presentation, at the precise period of greatest affinity, of the substances to be acted on; just as some non-telluric bodies, arrested by the earth, become visible to us only at the instant of their destruction by ignition.

That every molecular change of nutrition or secretion—every action of a muscle,—the exercise of every mandate of the will through the nerves,—perhaps every thought of the mind—is accompanied by some disturbance of chemical affinity, some disengagement of electricity, of heat, and occasionally even of light, are now facts familiar to every one.

And may not practice, on the other hand, be made much more effective,—sometimes by prevention of disease, in the important but much neglected field of the chemistry of diet, and other prophylactic measures? and at other times in the treatment of disease by the use of remedies directed chemically, to the morbid chemical changes known to be in progress; whether in the first processes of reception of food and sanguification, or in the building up of the several textures of the body in nutrition by the new materials, or in the elimination of noxious and effete substances by respiration and excretion.

The subject of the removal from the body of the worn-out materials of the frame, and of substances introduced in excess, furnishes a very remarkable instance—shall I say of want of patriotism, and gratitude to one of the fathers of organic chemistry, or of the influence of a mere change of language on the imagination? There is no doubt that the oxydation of the tissues, in the words of the illustrious German chemist, is altogether included in the secondary assimilation of Dr. Prout; that the latter most fully pointed out the physiological processes subsequent to sanguification, "the formative and destructive changes" in the solids and fluids of the animal economy, with

* Hunter's Works, vol. i. p. 217. † Matteucci. Lectures by Pereira, p. 104.

‡ Liebig's "Animal Chemistry," p. 113, third edition.

the greater part of what is yet understood of their important bearings on pathology, in reference to the several gelatinous, or albuminous, or oleaginous materials of the body, in the production of cutaneous diseases, of gangrenous inflammations, of calculous complaints, of gout and consumption, and many other disorders; and in many particulars, probably with greater accuracy than Liebig.*

It is, however, a common error to mistake fresh terms for new ideas, and merely altered explanations for real acquisition of knowledge.

II. In the second place, the discovery of cell formation, and of endosmose, and exosmose, *i. e.*, transudation and chemical separation through their walls, as affecting not only the primary cells, but every membranous part of an organic body, and even the globules of the blood itself,—has materially changed our views of nutrition and of secretion and absorption, with reference to all the *fluids* of the body, and has made these processes appear like many similar changes effected in liquids by the same laws, out of the living body.

Thus in secretion, one cell selects its peculiar principles, and becomes filled with bile, another with saliva; but the active agent being in every instance a simple cell, it is no wonder that changes in the common liquid, within and without the cell, should affect the cellular endosmose, and that secretions should become, to a certain extent, vicarious; that the elements of bile, for example, should be separated by the cells of the kidney, and of urine by those of the skin. Still more important is the recent discovery of one of the most peculiar products of one excretion, urea, even in the healthy fluids of the body; as in the aqueous humor of the eye, and of both urea and uric acid even in the blood itself, without the intervention of any secreting organ; a circumstance so improbable in the history of secretion, that although, as he informs us, urea was thus seen by Dr. Prout in 1816, he could not believe the fact till it had been established many years afterwards by Dr. Christison and other observers;† but chemistry goes even further than this, and through the several stages of cyanogen—cyanide of potassium and cyanate of ammonia, actually forms this supposed exclusively animal substance without recourse to any organic body whatever.

Experiment upon liquids has already demonstrated some circumstances which affect the endosmotic properties of membranes, and will doubtless before long point out many of those additions to, or subtractions from, the blood, which producing alterations in the endosmose of the cell-walls and of the blood globules, will materially affect the fluids of the living body in health or in disease.

* See especially the Introduction to Dr. Prout's work on "Stomach and Urinary Diseases." 3rd ed.

† Prout on "Stomach and Urinary Diseases," 3rd ed. p. lxxiii.

Observation tends, however, to diminish the importance of the cells of excretory organs as compared with those concerned in *proper secretion*, and by showing that they probably transmit effete matter from the blood almost unchanged into the excretory canals, directs attention to the blood, rather than to the excretory organs themselves, for the origin of diseased excretions.

III. No less altered, in the next place, is modern doctrine relative to the office of the nucleated cells in the building up and support of the *solid* parts of the body, and their removal when no longer required.

It is interesting to see the nucleated cells, employed in laying down the several tissues, gradually alter their figure to fibrous or other more organized form, and, if Mr. Goodsir be correct, even up to independent animalcular existence; and on the other hand to observe, when their office has been fulfilled, and still more in diseased cartilage, or other tissue, the gradual deterioration of the cells, and their nuclei, in the processes of absorption and ulceration, and other morbid changes.

And thus it is evident of what importance are the quality of the fibrinous and albuminous constituents of the blood, in which alone (and probably only in the former) the formative cells can be generated, and also their proportion and relations to the globules, and other elements of that fluid, which must influence their nutritive functions.

Investigation begins to show some reason for the increase of fibrine in inflammation, with ready formation of organizing cells in the healthy; and for the unorganizable nature of this substance in the granular matter of scrofula, and the poisonous effusions of the intemperate and anxious; and of the fatty degeneration of the weak and aged;—and in time, perhaps, we shall gain some insight into the mysteries of cancer, where the cells and their nuclei, instead of healthy organization, acquire a power of indefinite multiplication and self propagation, till almost every part becomes a destructive, and yet rapidly growing morbid structure.

At the same time it must be remembered here also, as with regard to the fluids, that Schwann's idea of the universal agency of the cells in organization, has already been acknowledged, by almost every pathologist, to have been a too hasty generalization; and the organization of the fibrine of the blood under some circumstances without the intervention of cell growth, is again recognized as it was taught by Hunter, and followed out more minutely by Mr. Travers and other observers.

It will probably have been observed, even from this short sketch, that the tendency of modern physiology is to explain many of the phenomena of life on simply *physical* principles. The injudicious efforts of enthusiastic admirers of Hunter, and that even in this theatre, by unduly elevating the

"vital properties" so much dwelt on by him, may have led some to turn from his writings as they would from the unprofitable discussions of the vitalists, Stahl or Van Helmont, his immediate predecessors; but Hunter had to combat the extravagancies of the chemical and mechanical physiology of the day, and an examination of the *whole* tenor of his writings will show, that in reality he kept this part of his doctrines in due subordination to the rest.

And have *we* no need of caution against similar extravagancies of fancy? if we remember, in the physiology of the last century, that Borelli calculated the force of the heart to be equal to 180,000 lbs., while Hales estimated it 5 oz.; have we not witnessed the contest between the Proteine theories of the philosophers of Giessen and Utrecht?

If we wonder at the absurdities of some of the older theories concerning the nervous system, may we not still smile at the extent to which physical analogies are now sometimes carried? As when, for example, we see nervous matter and muscular structure considered as identical with a galvanic battery; —or when Matteucci calculates the quantity of heat and electricity, and therefore of nervous force, produced chemically by respiration and nutrition in a given time, and finds that a man consumes only 1-34th part of the quantity of carbon which a locomotive engine would require to perform the same journey; or that nervous and muscular force, developed by continued galvanic influence in a living animal, from the oxygenation of a given quantity of zinc, is six times as powerful as if the battery had been employed in generating steam;— confessing, however, with regard to his instruments, that "perhaps for a long time to come man will not attain that degree of perfection which exists in those living machines, which he knows not how to imitate, and can only admire."*

So also, when Poisseuille and Barchette, finding by experiment that endosmose takes place through dead animal tissues, between the serum of the blood and solutions of sulphate of soda or seidlitz water, at rest or in motion, would thence explain the action of a purgative salt as being also simply endosmotic; but leave the fact unaccounted for that a few grains of dry calomel will produce the same effect of copious discharge of serum from the intestinal surface.†

It is encouraging, however, for our future progress, to observe that modern physiologists and pathologists are not apt to look to a single cause for the actions of so complicated a structure as the animal body; they are not all vitalists, or solidists, or humoralists alone; nor do they wish to explain everything on *merely* chemical or electrical or mechanical principles; they know that the tissues may be at fault at one moment, and the fluids at

* Matteucci, op. cit. pp. 325, 326. † Matteucci, op. cit. p. 73.

another; that capillaries, nerves, and circulating blood, may all be concerned in one local morbid affection; and that although advancing science has explained much which was till of late mysterious, both in health and disease, there may yet be some controlling power in the living body, which may so modify the operation of physical causes, as to leave much for ever hidden from their finite capacities, for which they can only employ the term "vital affinities" or "vital actions," which to use the words of Dr. Alison "take place chiefly in that part of the system where the solids and fluids are most intimately mixed, and are continually exchanging particles."*

Again, it will have been observed from the same sketch, with regard to pathology, that every thing tends at present to give increased importance to humoral doctrines; and nothing more strongly than the recent discovery of urate of soda, by Dr. Garrod, in the blood, in health as well as in gout, leading to the great probability that in many other disorders also, a *materies morbi* is generated, which must be separated from the system for their cure; sometimes the purification being attempted by nature, though perhaps her very success is fatal, as when the insoluble salt of gout is indeed eliminated from the blood, but is deposited among the solid textures, so as to cripple every joint; at other times, in a more perfect manner by remedial art, and with more certainty, and at much less expense to the system, than by simple empiricism.

Iodine has been discovered, by Dr. Christison, in every fluid, even in the aqueous humor of the eye; our remedies may, therefore, be sometimes universally employed, while at other times elimination is sought for through some one or more of the great emunctories of the system, and especially by that excretion by means of which, for obvious reasons, most good has hitherto been effected.

And yet, even in this well-investigated subject, the very changes of health are not fully distinguished from those of disease. My friend, Dr. Bence Jones, for example, informs me of the singular fact that the acids of the urine are gradually lessened, sometimes even to alkalescence, after every meal, and then gradually increase again, till there is more acid than before; so that the degrees of acidity in the stomach, according to its state of fasting or repletion, may probably be expressed by lines, which rise and fall inversely with those which represent the urinous acidity; but with the addition of this anomaly, that when the acidity is greatest in the urine the quantity of uric acid is the least, and the uric acid is in greatest quantity when the urine approaches to alkalescence.

What numerous discoveries must, therefore, yet await us by assiduous investigation of the many other complicated secretions of the body. Above

* "Outlines of Pathology."

all, what a rich field of inquiry lies open from analysis of the source of all animal substances, whether solid or fluid, normal or diseased,—the blood itself.

Already are we familiar with the terms anæmia, hyperæmia, spanæmia, eachæmia, to designate some of the pathologieal eonditions of this fluid, and yet so eompletely is our knowledge of the blood yet in its infaney, that the very eause of its colour is still a *questio vexata;* how little, therefore, ean we expeet yet to understand of its morbid states.

Mr. Hunter, eonstantly speaking of the "vital actions" of the solids, was, nevertheless, a humoral pathologist beyond his age. If a philosophie pathologist of the present day, Dr. Williams, proposes the not inappropriate term, neeræmia* to explain one of five modes in whieh the life of the higher animals may be destroyed, Hunter also says, "I even suspeet death in the blood can take plaee independent of the solids, but the death of the solids must soon follow." He also deelares, as is well known, "I am apt to believe the life of the blood begins before it beeomes solid, and becomes a part of the body" and "the blood is as eapable of diseased actions as the solids."†

It is eurious to traee his great doetrine of "the life of the blood," at one time exalted to extravaganee, next falling into almost universal disbelief, now again, like many of his diseoveries, whieh were scarcely eapable of appreeiation when first promulgated, brought forward with all the force of novelty, and satisfaetorily proved in many points; but in danger, perhaps, like some points of modern physiology, of being carried to a greater theoretieal extent than Hunter thought of, or than faets will justify.

Aeknowledging the important ageney of a fluid eontaining sueh a variety of elementary substanees in the formation, by ineessant ehange, of new *chemical* eompounds, are we warranted in assuming, with some pathologists, that it can originate within itself, independent of the cells of the vessels eontaining and eirculating it, sueh ehanges as produee *organic* struetures? Have we yet sufficient proof that a conversion of the white granules into pus globules ean take plaee in and by the eirculating blood, eonstituting a real pyæmia? And if we find organized eneephaloid matter in the reeent lymph of serous effusions, and in the eoagula in the veins of eaneerous tumours, are we yet warranted, as Cruveilhier and other pathologists have done, in investing the white or the red globules, or any single eomponent part of the blood, with vital formative properties analagous to those of the eell-germs of organie structures!—a step far beyond the degree of vitality assigned by Hunter to the blood.

The marvellous diseoveries of the last quarter of a eentury, and the rapid progress observed in every art of life, may, however, excuse some over

* Williams's "Principles of Medicine," p. 464. † Hunter's Works, vol. i. pp. 231-233.

confidence in individual experience, some hasty publication of theories and speculations, based on imperfect observation, and sometimes supported by very illogical reasoning.—"*Omnia non properanti clara certaque sunt, festinanti improvida et cæca*,"* is, however, a true maxim, and those who are inclined to an indiscriminate adoption of every novelty, and who find the bold and specious theorizer more seductive than the calm and cautious philosopher, and an unknown but foreign name more potent than one more familiar, but of immeasurably greater real weight, will do well to remember the forty years of laborious investigation spent by Hunter on his work on the blood and inflammation, canvassed, and criticised, and altered by a committee of his friends, and scarcely ended with his own life.

On the other hand, if Harvey and Hunter were thought, by their contemporaries to be enthusiasts whose imagination was not kept in check by their judgment, it cannot, I think, be said with truth, that there is now displayed any want of readiness to investigate suggestions in practice, or in the sciences connected with it, which are presented on adequate authority, or which are not inconsistent with rational principles; in fact, the portals of medical science are so widely thrown open, that any indisposition in those who occupy them to test alleged discoveries, would soon be overpowered by public impatience at their apathy.

There was nothing, for example, contrary to physiological principles in the idea that gaseous substances, like ether, and subsequently chloroform, should quickly be absorbed into the blood; and therefore how widely and universally was the chance discovery of an American dentist, confessedly ignorant of chemistry, tried by the surgeons of this country! Wonderful indeed, and of incalculable importance to mankind, is this discovery of the all-pervading influence of subtle poisons, in a few seconds overpowering consciousness and sensation and voluntary movement, and proving, by daily experiment, not on the lower animals, but on living man, how close are the confines of life and death, and yet safely used in the earliest infancy, or in the most advanced age, destroying all suffering, and all apprehension of it, in some of the most fearful circumstances of life, and at the same time diminishing their fatal effects.

If, indeed, I am justified in applying the term "chance" to the discovery of anæsthetic agents, instead of admiring the preference given by a higher Power to so humble an instrument, rather than to the science of Sir Humphrey Davy, who, by a remarkable anticipation, nearly half a century ago, actually proposed one of these substances, nitrous oxide gas, "as a means of destroying physical pain during surgical operations."†

* Livy.

† "Researches, Chemical and Philosophical." Works by Dr. Davy, vol. iii. p. 329.

Nor are such investigations confined to modern opinions or discoveries, but truth or error are sought for in questions long considered as demonstrated. I would instance the fallacies proved by Dr. G. Burrows to exist in Dr. Kellie's experiments on the influence of atmospheric pressure on the circulation of the brain,—so important in reference to the treatment of the injuries and diseases of that organ;—and the revival of pressure as a safer and easier mode of cure for aneurisms of the extremities, previously laid aside because it had been erroneously concluded, by mere inference from analogy, that total and continued cessation of the circulation of the blood in the tumour was necessary for coagulation.

It has been said by Humboldt that, "excited by the brilliancy of new discoveries, and fed with hopes of which the delusiveness is not discovered till late, every age dreams that it has approached near to the culminating point of the knowledge and comprehension of nature."* I am, myself, however, well aware of the gradual, and often slow progress made by science when it depends in part on accumulation of facts, and how difficult it often is to perfect a single point which subsequently appears exceedingly simple. It would seem almost inexplicable to us that Mr. Hunter should have failed to recognize the right method of applying the ligature in his operation for aneurism, did we not remember how long afterwards Scarpa continued to apply the large and numerous ligatures which he had seen first used, and how very recently so experienced a surgeon as Dupuytren included the vein and artery in the same ligature, when Brasdor's operation on the distal side of the tumour was revived in this country by Mr. Wardrop.

I am well aware, also, that so much still remains, and must ever remain, unknown regarding the animal frame, that although it is wrong to call medicine entirely a conjectural art, yet it cannot be elevated to the rank of an exact science. The wisdom of experience, which is rational empiricism, should be felt in ours as in other professions, and there must still be room for theory and variety of opinion. It is related of Hunter, that to a pupil who remarked to him that he had said differently on the subject last year, he replied, "Never mind what I *then* thought, I will tell you my present opinion." In this respect, at least, Hunter is imitated by his successors. Notwithstanding the long existing confidence of the navy in the efficacy of lime juice and other acids, even potash, although so opposite, has recently been recommended for the cure of scurvy,†—now so curiously revived, after it had almost disappeared from the catalogue of disease—who can glance at the endless variety of strongly vaunted remedies for the still more formidable

* Humboldt's "Cosmos," by Col. Sabine, vol. ii. p. 357.

† Dr. Garrod, "On the nature, cause, and prevention of Scurvy"; *Edinb. Monthly Journal of Medical Science*, Jan. 1848, p. 457.

epidemie onee more visiting these lands, without exclaiming with the dramatist,

" Focistis probe,
Incertior sum multo quam dudum."

But on the whole there is mueh ground for eneouragement and hopeful expeetation in the spirit with which physiology and pathology are at present cultivated; and if some are hasty and visionary, and others ineredulous, and *laudatores temporis acti*, there is, I believe, among the members of our profession, more general soberness, and eandour, and diffidenee, and earnest seareh after truth, than at any former period; acting, moreover, under mueh more favourable eireumstanees.

It was said of geographieal diseovery, by the historian of Ameriea, "During the eourse of the fifteenth eentury mankind made greater progress in exploring the state of the habitable globe than in all the ages whieh had elapsed previous to that period. In comparison with events so wonderful and unexpeeted, all that had hitherto been deemed great or splendid faded away and disappeared. Vast objeets now presented themselves. The human mind, roused and interested by the prospeet, engaged with ardour in pursuit of them, and exerted its powers in a new direetion."*

Similar to this is the rapidity with whieh general seienee advanees at the present time. Every day does some new diseovery astonish the world; and fresh points of eontaet, and new links of eonneetion, between our own and various eollateral seienees, beeome evident. It eannot be but that the inereasing flood of light, whieh is shed over general seienee, should in some measure illuminate medieal seienee also.

Surely I have said enough regarding ehemieal investigation to disprove the estimate formed by an exeellent praetieal teaeher, when he says, "As to any benefit derived from analytie ehemistry in solving the problems of vital aetion, or elueidating the funetions of the various organs in health and disease, they may be said to be few, and unimportant, and ineonelusive."†

Nor ean I agree with those, by no means few in number, who, remembering the errors of the supposed diseoveries of the early part of this eentury, by means of the eompound mieroseope, experienee an equal distrust of the simpler aehromatie lenses of the present time, as assisting the anatomist and ehemist; although, in faet, the mieroseopieal deseriptions of Leuwenhoek or Boerhaave, a eentury ago, from their single glasses, are still aeeurate and true.

The mieroseope appears at present to be effeeting ehanges in our knowledge of nature, no less wonderful than those views whieh similar

* Robertson's "History of America," book 2, p. 141, 8vo. ed.

† Graves's "Clinieal Medieine," p. 30.

instrumental improvements are opening to our senses through the telescope. I know not which extreme in magnitude is most calculated to excite our admiration and our reverence for our common Creator—the contemplation of the estimated 18 millions of telescopic stars in the Milky Way, or the 40,000 millions of silicious shells of Galionellæ according to Ehrenberg's calculation, in a single inch of polishing slate? *

With more moderate views of its utility, perhaps, than some may entertain, the Council have not been unmindful of the benefits which anatomy, physiology, and surgery, may derive from the use of the microscope. They have availed themselves of the peculiar talents, for this purpose, of their assistant conservator, Mr. Quekett, to institute an annual course of demonstrations, the value of which is attested by the presence of an increasing number of the members of the College.

They have purchased a large number of beautiful preparations of minute structure, both natural and morbid; and, at no trifling cost, they have commenced the publication of what, under the name of a catalogue, is in reality a splendid series of several volumes of engravings, every figure in which, traced by means of the camera-lucida, presents, as I know by official inspection, not a mere resemblance, destitute of exact measurement and proportion, and therefore open to dispute, but like the daguerreotype portrait, possesses the undoubted merit of faithfulness and truth. The first volume, now on the eve of completion, will, in fact, serve (without the necessity of reference to the collection itself) as a complete treatise of general minute anatomy and physiology; and the whole work, I trust, will reflect credit on the College.

Even the more stationary branches of physical science have, within these few years, contributed something towards medicine; as, for example, the stethoscope, the hydrostatic bed, the ingenious spirometers of Hutchinson and Sibson, and the immoveable dextrine or gum splints, so invaluable in the treatment of fractures and diseased joints. Much more, then, may we expect for pathology and practice from those sciences, whose progress has been so rapid as almost to exceed belief.

Take, for example, the subject of electricity. Even within these few months, two small plates of zinc and copper, united by a copper wire, and wrapped on a diseased limb by means of moistened linen, have been employed to restore motion to a palsied limb; to produce an issue under the zinc, while the copper plate remains harmless; to cause, on the one hand, a healthy action in an indolent ulcer, and on the other, to destroy the vitality of a morbid growth.†

* Humboldt's "Cosmos," vol. i. p. 140. † *Medical Gazette*, July 7, 1848.

How fertile a field of inquiry is probably open from our gradually increasing knowledge of the varying conditions of the same electric power, in relation to its atmospheric influence on the whole of the animal and vegetable economy, and therefore, probably, in the production of disease—especially those of formidable epidemic kind;—whether this electric power be traced in its regular diurnal variation, or in the awful explosion of the thunder cloud, or in the silent magnetic storm, unnoticed save in the observatory, and yet affecting a large portion of the globe, even the mere form, not of the mountains, but of the lesser works of man; disturbing the electric relations on the earth's surface, if Professor Schonbein is correct in his detection, by means of iodide of potassium, of the continual emanation of ozone from pointed bodies into the atmosphere.*

But may I venture to ask whether we may not derive a useful lesson for our professional studies from considering and imitating one element of success, in the mode in which some of these sciences are cultivated? In reading the works of adventurous voyagers, such as the latest of them, Sir James Ross, we cannot but be struck with interest by the numerous directions in which the varied knowledge of such men is brought to bear on science; the magnetism and structure of the earth,—the temperature and composition of the waters at a depth as great as the summit of the Andes,—the different vegetable and animal productions of land and water,—the tidal movements,—the appearance of the heavenly bodies, and numerous other subjects of interest and importance. But if such observations are carried on amid the dangers of the Antarctic circle, in the same manner, and often at the same fixed moment, are corresponding records made by others, in concert and agreement with them, in the Arctic regions, in the Tropics, and in the eastern and western hemispheres; and the nature and method of these investigations are previously considered and deliberately agreed upon by men most eminent in each of these several pursuits, by whom, also, subsequently, the results of these inquiries are anxiously compared and analyzed, and their value duly weighed.

Would not the stimulus of some such concert and controlling power as I have alluded to in others, advance medical science also, more steadily, step by step, in the right direction, and at the proper time, through the combined efforts of many now isolated labourers? Would it not check many crude and ill-digested hypotheses, prevent the repeated revival of disproved facts and exploded theories, and give a higher value to original discoveries?

Would not, especially, such a system of co-operation work for good in public medical institutions? In each of the different hospitals of this

* *Medical Gazette*, Oct., 1848.

metropolis, for instance, there is much local traditionary knowledge of intrinsic merit, which is confined to its own pupils, in each there are peculiar modes of treatment, which are not always different roads leading with equal advantage to the same end; nay, their doctrines are sometimes so opposite, that a form of tumour which is regarded in some schools as cancerous and constitutional, is considered in others as fibrous and purely local.

The large scale on which science and practice are in them combined and publicly administered, makes hospitals the only safe standard of statistical information. Private experience is too limited, and the effects of treatment recorded in medical writings greatly too successful to express the whole truth. It could not be but that the united and publicly known results of hospital experience, preserved on one concerted and uniform plan, were it only for the short period of a few years, would afford a mass of most valuable information, now in great measure lost or insulated, which would enable those who have the peculiar taste and talent necessary for the very difficult task of statistical analysis, to solve a great number of most important questions in medical and surgical practice, in which, therefore, comparative certainty would take the place of the ever-changing aspect of personal experience.

It is very gratifying, however, to witness an increasing co-operation, and appreciation of each others' merits, among the cultivators of science in different nations; and doubtless we must acknowledge ourselves largely indebted to other countries, particularly to the Germans, for much of that minute pathology to which I have drawn a passing attention this day.

It is pleasant to see the medals of our Royal Society awarded to Berzelius, Matteucci, Schwann, Dumas, and Liebig, for the labours by which they also have forwarded medical science, and to see a British philosopher, Sir David Brewster, fill that honourable place in the French Institute which has recently been vacated by the great Swedish chemist Berzelius.

Let me observe, in conclusion, that it is also gratifying to witness an increasing sense of the benefits and the pleasures which may be derived from scientific knowledge by persons in every rank of life, a sense which has been constantly evinced by the illustrious personage whose love for science has prompted him this day to honour our theatre with his presence.

No doubt, Sir, our President will have expressed to you, better than I can do, the deep sense of your Royal Highness's condescension which will be felt, not only by this assembly, but by every member of this College.

I will, therefore, only presume to add, that as it is a pleasure to almost every Englishman to see the Prince Chancellor of one of our ancient Universities assist in giving to its inmates that union of modern science and knowledge

with classical learning and mental culture, which a conviction of its importance had previously induced him to encourage in the younger students of that great seminary, which almost forms a part of the palace of our Sovereigns; so is it also the prayer of every Englishman that the force of parental example may have its full influence upon those still more youthful descendants of a long line of princes, whose personal character, thus trained, would add stability to the throne itself, even if there should hereafter arise, with fearful rapidity, such an overthrow of governments and dynasties as it has been our fortune, under Divine Providence, to sympathize with, though not to share.

ANNUAL ADDRESS

DELIVERED BEFORE THE

FELLOWS OF THE ROYAL MEDICAL & CHIRURGICAL SOCIETY,

On Saturday, March 1st, 1856,

BY CÆSAR H. HAWKINS, F.R.S.,
PRESIDENT.

GENTLEMEN,—An address from the President is inserted amongst the standing rules of the Society, as part of the agenda at its anniversary meeting, and therefore I am compelled, however unsatisfactorily, to fulfil this duty.

In reference to the present state and condition of the Society, the several reports which have been read, and the discussion which has taken place, are sufficient to show the desire of the Council to promote the welfare of the Fellows. The expenditure upon our rooms has, I trust, tended considerably to the comfort and even the health of the Fellows. The usefulness of our excellent and extensive library will, I hope, be much increased by the formation of the new catalogue, which the Council have thought right to offer to every resident Fellow who is desirous of possessing a copy, although the expense is necessarily considerable. I cannot refrain, however, from adding my meed of praise to the great care and labour which have been bestowed

upon its formation by our present sub-librarian, Mr. Wheatley, by whom every volume has been examined and entered without reference to the former imperfect catalogue, and also by our librarians, one of whom, Mr. Dixon, whose valuable services we have lost to-day, has not allowed a single word to pass through the press unrevised by himself. Our meeting at the present hour has also arisen from the wish of the Council to study your convenience and comfort; whether correctly or otherwise, it is for the Fellows to decide.

My task will now be confined to the customary notice of the Fellows whose deaths we have had to deplore since our last anniversary, of whom three were non-resident.

One of these gentlemen, Dr. Ifil, formerly practised in London, but died at Barbadoes, on the 9th of March, having for several years relinquished medical pursuits.

The second, Dr. Alexander Russell Jackson, was a staff-surgeon of the 1st class on the Bengal establishment, and was entrusted by the East India Company with the care of their depôt at Warley, where he died on July 28th.

I was personally acquainted only with Mr. William James Wilson, of Manchester, who died on the 19th of July, and whose gentle and amiable manners and professional intelligence must have been well known to many of the Fellows. Born at Leeds, and early left by the death of his parents to the kindness of relatives and to his own exertions, Mr. Wilson took the surest road to success by procuring professional knowledge from every possible source when he began his studies in London. Assistant to a surgeon at Islington, he enjoyed the opportunities of acquiring experience, which a large workhouse has afforded to several other eminent surgeons, while he also laboured at St. Bartholomew's Hospital, and at the Eye Infirmary in Charter-house-square, and afterwards as dresser at the London Hospital. Having then settled at Manchester, his energy procured the establishment soon afterwards of an ophthalmic hospital, to which and to a lying-in hospital he was attached, and afterwards for twenty-eight years as surgeon to the General Infirmary, each of which establishments assisted in procuring for him an extensive practice in all branches of our profession. A friend and pupil of my own, who had been Mr. Wilson's dresser, informs me that he enjoyed the confidence and esteem of a wide circle of his medical brethren during his forty years' residence amongst them, and was an especial favourite with the junior members of our profession, whom he was always desirous of assisting in their claims to any merit for judicious treatment. The only publication of Mr. Wilson, I believe, was a short paper on "Purulent Ophthalmia," just after he became a member of the College of Surgeons, chiefly designed to show the efficacy of bark, as he had recently seen it employed at the Eye Infirmary, in arresting the sloughing of the

cornea. The last opportunity of conversing with Mr. Wilson which I enjoyed, was when he presided at the annual festive meeting of the Fellows of our College, of which I had then the honour of being President, and I was much struck by the fears he expressed to me lest any observations made by him, a provincial Fellow, should excite some supposed latent feeling of party spirit between them and their metropolitan brethren. I ventured to hope that his apprehension must be without foundation anywhere, but that I could affirm with confidence that such sentiments were not entertained by London surgeons with regard to their provincial brethren. May I not appeal to the selection of my immediate surgical predecessor in the chair of this Society, also a distinguished provincial surgeon, as a proof that eminence, wherever shown, will always be welcome to us metropolitans, and that the only rivalry we desire is in the advancement of medical and surgical science in all parts of the world.

We have also been deprived of four of our resident Fellows, one of whom, Mr. Avery, was removed from us on March 5th, a few days after our last anniversary, after severe and lengthened sufferings, which illustrated the uncertainty of medicine, since his pulmonary disease, which was fatal, was, I understand, unsuspected, being hidden by the very severity of its effects. Mr. Avery was a very zealous and ingenious surgeon. His ardour in the acquisition of knowledge is shown by the doctor's degree granted to him in Paris in 1831, after he had finished his English studies, and by his attempted military service in the revolutionary war in Poland, where his objects in embarking in it were quickly cut short by a lengthened captivity, full of hardships, amongst his Russian conquerors. His ingenuity is evinced by several instruments which he constructed, especially one for opening the urethra in the perinæum, and for the inspection of several of the internal parts of the body, for the latter of which inventions he received the silver medal of the Society of Arts. Mr. Avery contributed several cases, or papers, to the medical journals, and to the "Transactions" of the Pathological Society, but not to our own, from which his diffidence deterred him. His favourite pursuit was the operation for fissure of the hard and soft palate, and he is said to have practised it with dexterity and success, of which he published some cases, with practical remarks, in *The Lancet*.

From his official position as our treasurer, the Society has experienced a double loss by the very sudden death of Dr. Joseph Moore, on the 7th of June, who was actively engaged in our service up to that time, being an excellent man of business. He was a Master of Arts, as well as a Doctor of Medicine of the University of Glasgow, and among his professional appointments was that of consulting physician to Queen Charlotte's Lying-in Hospital, to which branch of practice he was specially devoted. Dr. Moore was a member of the Ethnological Society, and he contributed a short

paper on "Secondary Measles" in the twenty-second volume of our "Transactions."

The death of another of our Fellows, on Nov. 7th, was almost as sudden as that of Dr. Moore, for Mr. George Pilcher had lectured as if in perfect health, within six or eight hours of his death, although some warning signs, unheeded by himself, had been noticed by more watchful observers for a considerable time. Few learn so well as those who are called upon to teach others, and Mr. Pilcher was so fortunate as to add to the usual studies of our profession that best of all preparations for surgical practice—the duty of a lecturer on anatomy in conjunction with his relative, Mr. Grainger, in Webb-street. He retained a taste for these pursuits, and has published some remarks on the physiology of the tympanum and on the excito-motory system, in which he desired to include the ganglionic system—a novelty which, I presume, will not meet with your concurrence. An essay "On the Structure and Pathology of the Ear" procured for Mr. Pilcher the Fothergillian medal of the Medical Society of London, and it was probably the means of determining the course of his future career, and contributed much to his success, which was considerable in this branch of surgery. Mr. Pilcher endeavoured, however, very laudably to avoid the narrow views which special practice is so apt to engender, and to combine general scientific and practical surgery with his particular attention to the maladies of one organ. Nor was he unsuccessful, if we take as a proof of considerable professional estimation his several offices of Surgeon to the Surrey Dispensary, Lecturer on Surgery in the Grosvenor-place School, President of the Medical Society, and Member of the Council of the Royal College of Surgeons.

To those who are inclined to moralize on the vanity of earthly ambition, and the transitory value of the highest professional success, an annual retrospect of the diminution of our Fellows by the hand of death, affords an ample text; but how much stronger is the lesson, when we consider what would have been the impression eight short years ago if my friend and colleague, Dr. William Frederick Chambers, had been then removed from amongst us, instead of surviving in retirement till the 16th of last December; and especially to those of us who remember Dr. Chambers's dignified and gentlemanly bearing in this chair—who were accustomed to meet him in professional and private intercourse, and never without kindness and consideration—when he occupied the first place amongst the practising physicians of this country, and when few persons, from the Sovereign downwards, could risk disease without invoking his aid. It would have been a pleasure to me to have dwelt upon the life of Dr. Chambers — a ripe scholar, a successful practitioner, and always a gentleman—to have learned by what means he acquired knowledge, how he attained success, what

official situations he had filled, and what was his deportment and estimation amongst us; but I have been so recently and publicly anticipated, that it would doubtless be tedious to repeat what most of us have read. Amongst the instances of Dr. Chambers's great industry and desire to benefit his patients, we have been astonished to hear of Dr. Chambers's never-ceasing regularity in his daily notes of every case and of every prescription—of his sixty-seven quarto volumes, of 400 pages in each, besides numerous thinner quartos in the shape of indices! But I must confess my strong inclination to ask—Might not this self-imposed absence of that rest of body and mind which is necessary to all, but certainly not least to one so actively engaged in labour, and who, far more than others, dreaded responsibility, and suffered from anxiety,—have much caused that strain upon his powers, which counselled retirement long before it was actually forced upon him, and which deprived retirement of its solace? Such unusual care must have left little leisure to instruct others by his experience, and accordingly we find no distinct work published by Dr. Chambers, except three lectures on Cholera, which are written in a very perspicuous style, and contain such a history of the disease, from older writers, as might be expected from a man of Dr. Chambers's classical attainments, together with the opinions he had formed from his official examination of papers and reports from 1814, when he was appointed Examining Physician to the East India Company, to the time they were delivered in 1832, the last of them having been given on the very day after the first announcement of the existence of Asiatic cholera in the metropolis, when he had just seen three cases. They were not published, however, till 1849,* when the second invasion of this frightful epidemic had given him experience which confirmed him in the opinions which he had previously formed from the reports of others, especially that it was a fever dependent on atmospheric causes, identical with what had been sometimes witnessed before, but not propagated by contagion. Indeed, he was a staunch non-contagionist in all diseases. These lectures, and some others on Fever, in the first volume of the *Medical Gazette*, in 1828, equally clear and practical, excite regret that we have nothing further from his pen. It was however, as a clinical teacher in the wards of St. George's Hospital, from 1816 to 1839, rather than as a lecturer, that Dr. Chambers shone. Simple and kind in explanation, clear and scientific in diagnosis, precise in verification of his views in fatal cases, and energetic in treatment, his value as an instructor in practical medicine was highly appreciated by all who studied under him.

It only remains for me to notice the removal from our list of foreign honorary Fellows, of the justly celebrated and veteran physiologist, Magendie,

* These Lectures appeared in *The Lancet* of that year.

by his death on the 7th of October, at the age of 72. Magendie has been well known and eminent for above half a century, for although it is said that he did not learn to read and write till he was ten years old, in consequence of his father's devotion to revolution, yet that before he was twenty he became, after a successful *concours*, a teacher of anatomy under Boyer, and so great was his early reputation amongst his contemporaries, that he was elected, at the age of 36, into the very limited number allotted to our profession in the Academy of Sciences in Paris. I cannot pretend, within a brief space, to give an account of all the numerous and diversified labours of this distinguished physiologist, but some circumstances require attention, connecting his name in a peculiar manner with our own country. For myself individually, if I am not egotistical in alluding to it, it is natural, that of all Magendie's researches I should always have felt the greatest interest in those connected with the spinal and facial nerves, which in their investigation, are inseparably connected with each other. A pupil of Sir Charles Bell and Mr. John Shaw, for both of whom I entertained the highest regard, having to make choice of lecturing on anatomy with my own teachers, or with Mr. Herbert Mayo, and having ultimately lectured both with Bell and Mayo, it was my lot to assist in the performance of the greater number of the experiments by all of those gentlemen on these subjects; indeed, one of the earliest records of them published at that period was partly in my own words.

I cannot but lament that hard words, and not a little insinuation, have been employed to advocate exclusive claims to discoveries for one or the other physiologist, which should, in justice, be divided amongst all parties, each contributing, in different ways, to the elucidation of what neither might probably ever have completed by himself, for the successive steps by which success was ultimately attained were numerous and complicated. For how much, then, are we indebted to Magendie for what we know of the functions of the spinal cord and nerves?

First, and above all, it is unquestionably (as between these parties) to Sir Charles Bell, that the palm of originality must be assigned. It was by him that the true method of investigation was commenced; and it is, therefore, not without some justice, that the completion of the investigation is also generally called by his name. That nerves possessed different endowments, according to their several sources in the central organs, and the number of their roots; that one set were regularly double-rooted and symmetrical, and another set as constantly single-rooted and irregular, and superadded to the former; that each of the double-rooted nerves was connected with both great divisions of the brain — with the cerebrum through its crura, the anterior columns of the spinal marrow, and anterior roots of the spinal and fifth nerves; and with the cerebellum through the

crura cerebelli, posterior columns of the spinal marrow, and posterior or ganglionic roots of the spinal and fifth nerves; that with the cerebrum and its extensions were connected the nerves of motion going outwards, and the nerves of touch and sensibility going inwards from the body or viscera; and that by the cerebellum and its posterior prolongation and nerves were regulated the secret operations of the bodily frame, and the connections which unite the parts of the body into a system;—all this formed a grand and comprehensive theory of the most attractive kind, which was tested by experiment before 1811, was then nearly dormant for ten years, and revived with renewed impetus in 1821, when I was myself a pupil. That the two roots of the spinal nerves possessed different properties was soon ascertained by these experiments, and also that motion depended on the anterior roots, and that convulsions ensued from irritation of these roots, and not of the posterior; but the imperfect knowledge of the curious effects of reflex action, as now understood, prevented the recognition of the true significance of the facts we witnessed, and made the source of sensation obscure and doubtful, and at first even appeared to confirm the ingenious though erroneous theory of Sir Charles Bell. Before these doubts were solved, Magendie performed his experiments on the roots of the spinal nerves, and published the result in August of the following year, 1822, and thereby clearly established that the posterior roots of the spinal nerves, and posterior columns of the spinal marrow, were much more connected with sensation than the anterior roots (*plus particulièrement au sentiment.*) This fact he subsequently corroborated by means of galvanism and strychnia, though he never ventured to assert, as some have said for him, that either motion or sentiment belonged to either root exclusively. It is by other physiologists since his time that this has been asserted.

Such, then, was the partial correction of Sir Charles Bell's experiments by Magendie, who was led to their performance, doubtless, by knowing the experiments on the facial nerves already begun in this country. But there is not, as it seems to me, the least ground for the imputation of unfairness, or of his having been acquainted with Sir Charles's experiments on the spinal nerves before performing his own, through either private or published information. So far from this, Mr. John Shaw himself says, in October, 1822, two months afterwards, "In the last number of the 'Journal de Physiologie,' several very curious experiments are related by M. Magendie, which are not only important in themselves, but are interesting, as they corroborate some experiments which had been previously made in this country, but of the performance of which M. Magendie does not appear to have been aware." He then gives a translation of Magendie's paper, and adds: "The importance of the facts discovered by these experiments must be evident to everyone; and it must be gratifying to the true friends of

science in this country to find that M. Magendie, whose sole object in these pursuits appears to be the promotion of physiology, has by his experiments come to the same conclusions as those which had been previously deduced by Mr. Charles Bell from observations made on the brain and spinal marrow. The truth of these deductions was also by him put to the test of experiments, the results of which, though they correspond with those of M. Magendie, were *not so conclusive.*" Finally, of our experiments in Great Windmill-street, he says: "It has been difficult to ascertain which of the filaments bestows *sensibility* on the part. It was easily shown that, if only the posterior set was destroyed, the voluntary power over the muscles continued unimpaired; but the pain necessarily attendant upon the performance of the experiments, prevented us from judging of the degree of *sensibility* remaining in the part."

Why did Sir Charles, in his experiments, obtain this "not so conclusive" a result? It arose very much from a remarkable contrast between these two great physiologists. Magendie's recklessness of animal suffering, and his remarkable public apostrophe to one unfortunate victim on the table, "*taisez-vous, donc,*" figured in pamphlets written to denounce the universal vivisection which characterized the physiology of that day, as much as chemistry and histology are used as instruments for its elucidation at the present time. Sir Charles, on the contrary, could not bear to witness suffering and torture, even for the sake of science; and it was not till Mr. John Shaw, with myself or other assistants, had prepared everything for him that our chief ventured to appear and observe, and frequently not till after the animals had been stunned and deadened to pain, nor would he desire more than three or four of the spinal nerves to be exposed for experiment. Magendie, on the other hand, was not satisfied till the whole spinal column was open to his observation, and therefore he saw more clearly.

Bell and Magendie having proved what were the functions of the separate roots of the spinal nerves, attempted also by experiment to test the properties of the columns of the spinal cord, from which they arise; but the experiments were not conclusive, nor as far as they went did pathology satisfactorily confirm the identity of the influence of the two columns with their respective roots. Many Fellows of the society are doubtless aware of some remarkable experiments of M. Brown Séquard, recently performed, which are thought by our allies (in science as in war) to overturn the discoveries of Bell and Magendie. But it must be remembered that Bell's merit consists in pointing attention to the *roots* of nerves, and that whatever may be proved as to the spinal cord, even if hyperæsthesia is produced when we should have expected anæsthesia, the doctrines of the motor and sensitive properties of the respective origins of the spinal nerves, first taught by Bell and Magendie, are not thereby invalidated.

Magendie has continued his interest in physiology even since his death. He founded, in conjunction with La Place, an annual prize for this science ; and it is remarkable that the first prize awarded since he died has been given to M. Brown Séquard for his discoveries on the functions of the spinal cord.

But it is probable that neither Bell nor Magendie would have followed out with success their experiments on the spinal nerves if they had not been assisted by investigations, simultaneously conducted, into the functions of the cerebral nerves. And here again it was the brilliant imagination of Sir Charles Bell which opened up this path to truth, as far as he and Magendie, or as France and England, may advance their respective claims, and which in this part of the subject also, as with the spine, induced him to theorize first and experiment afterwards—I mean with regard to the nerves of the face, and thus again to obtain results "not so conclusive." Did two nerves go to the face, each, as it was thought, to the muscles and to the surface? They must therefore convey different properties. One was irregular and single ; it was, Sir Charles thought, the respiratory nerve of the face, connected with speech and expression in the higher animals ; the other was to give motion to the same muscles and to others in the lower function of prehension and mastication. With all the beautiful movements of the elephant's trunk, which has been aptly compared with the steam-engine for its nicety and its power, and which the infra-orbitory nerve supplied, as it was supposed, with motor power, yet as connected also with the breathing organs, the trunk ought to possess a second motor nerve, the portio dura of the seventh. If the celebrated actor, Liston, was the subject of palsy of the side of the face, as far as the portio dura was concerned, his comical expressions were owing, it was supposed, to the great influence he had acquired over the muscles of the face through the fifth governing their actions. Magendie, without any imagination, was a very accurate observer of facts. He at once recognized the error we had all fallen into regarding the infra-orbital nerve, when he saw the experiment of its section performed in Paris by Mr. John Shaw, who deserves a larger share of credit than he has received for these investigations, owing to his affection and admiration for his relative and friend. Here, too, Sir Charles Bell's humanity stood in his way, for he only divided the portio dura on one side of the face, the division of which by Mayo on both sides left no doubt that no power of motion was derived from the fifth to the muscles of the face, and it was soon acknowledged by everyone that the seventh was their sole motor nerve.

The superficial nerves and muscles being thus disposed of by the corrections of Magendie and Mayo, the next step was gained by Mr. John Shaw's division of the fifth nerve within the ganglia ; for hitherto neither Bell, nor Magendie, nor Shaw, nor Mayo, understood the anatomical distribution of its two roots, though it was known to several of their predecessors ; and

doubly important was this step in advance, as the functions thus ascertained by dissection and experiment to belong to the motor and sensitive roots of the double-rooted cerebral nerve, by the successive and combined observations of Bell, Magendie, Mayo, and Shaw, were a corroborative evidence of the same functions in the separate roots of the remaining nerves of Sir Charles Bell's original symmetrical class—namely, those of the spine. Magendie finally completed the subject by his experiments and observations on the cerebral portions of the fifth, by which, after somewhat absurd errors in relation to the special senses, which his almost entire absence of generalizing powers led him into, he fairly demonstrated the importance of the sensitive part of this nerve in connection with the perfection and even the life of the parts supplied by it; and this discovery also threw further light upon the corresponding vital functions of the corresponding part of the spinal nerves, which pathology has taught us to be true. Such is a fair and impartial statement of the share which our late Honorary Fellow contributed to these investigations, after they had been commenced and nearly completed by Sir Charles Bell.

But the history of the subject would not be perfect without allusion to one remarkable circumstance. If you examine the list of presents to the Royal Society at the end of the "Philosophical Transactions" for 1820, you will find that in January of that year they acknowledged that they had lately received a treatise by Bellingheri, which was published in 1818, "On the Anatomy, Physiology, and Pathology of the Fifth and Seventh Nerves of the Head and Face," in which treatise, published three years before Bell began his experiments in this country, almost the whole is accurately pointed out which it required the united efforts of Bell, Shaw, and Magendie, and Mayo, during about three years, to elucidate. Even some of the errors of their observations were committed also by Bellingheri. And yet it is quite certain that not one of them could have known of its existence, and of the experiments, dissections, and pathological observations of this Italian physiologist. To suppose so (and even this insinuation is not wanting) is to imagine also that they each in succession voluntarily proffered false inferences and erroneous anatomy, in order to have their errors pointed out by a competitor and rival. The simultaneous discovery and rival claims of Le Verrier and Adams were allowed and adjusted to their mutual satisfaction. Bellingheri, undeniably and completely preceding the English and French physiologists, was not so fortunate, and his treatise was perfectly unnoticed in this country till 1834, about sixteen years after its publication; and by whom is his name known as the philosophical discoverer of the functions of the fifth and seventh nerves of the brain? Nor is this all that might be said of Bellingheri's claims, for he must have discovered much of the anatomy, and performed many ingenious

experiments corroborative of Bell's and Magendie's, upon the spinal cord and its nerves, before he knew what they had done ; for his memoirs were begun to be read before they published the results of their experiments, although his complete work, published in 1823, may have been altered and corrected by what he had then learned of their labours, with which he fairly acknowledges his acquaintance.

Had Magendie done nothing in regard to the nervous system, he would nevertheless have been unquestionably a great physiologist. His beautiful and conclusive observations on the mechanism and causes of vomiting, his ingenious and remarkable experiments on absorption by the veins, and those on the cerebro-spinal cord and the uses of the epiglottis, would alone have sufficed to establish his legitimate claims to this character. Many of Magendie's investigations had even a more directly practical character, such as those on the entrance of air into the veins ; on the action of emetics ; of strychnia and other poisons injected into the blood ; on the nutritive properties of different articles of food. The latter researches changed the dietary of some of the hospitals in Paris, and his report on quarantine led to the removal of many vexatious regulations. In fact, a long list of Magendie's writings — essays, papers, and some complete works, above all, his "Journal de Physiologie" and "Précis de Physiologie" —have made a knowledge of his labours essential to every one who pretends to any acquaintance with the science of physiology and its connection with the healing art. With no pretensions to comprehensiveness of view, or genius for combining and generalizing his facts, Magendie's unwearied industry and painstaking, his accuracy of observation, and, above all, his faithful and trustworthy record of all he did and saw, and his readiness to overcome objections, not by argument, but by renewed inquiry, are evident throughout his life ; and it has been said by one who appears to have known him, that it was sufficient to gain his esteem to prove to him that he had adopted a wrong view. It must be confessed, I fear, that so much truthfulness, candour, simplicity, and straightforwardness, have not been so well marked in every man of science, and they must have contributed not a little to the great influence which Magendie exercised over the Government, as well as in the world of science.—*The Lancet, March* 15, 1856.

SIR CHARLES BELL & M. MAGENDIE

ON THE

FUNCTIONS OF THE SPINAL NERVES.

During the meeting of the British Medical Association at Oxford in August last, a paper was read by Dr. Robert Mc Donnell, an abstract of which appeared in the medical journals (see *British Medical Journal*, August 8th and 15th, and September 19th, 1868, and *Lancet*, Aug. 8th, etc.), in which the author said that, "after carefully analyzing Bell's writings, he had come to the conclusion that, previously to 1822 (when Magendie made his experiments, and published the results), Bell's written works contained no evidence that he conceived the idea that the posterior roots (*i.e.*, of the spinal nerves) were sensitive, and the anterior motor. He (Dr. Mc Donnell) assigned to Magendie, and to experimental physiology, the credit of having discovered this fundamental fact in physiology."

Having assisted my teachers and friends, Sir C. Bell and Mr. John Shaw, in many of their experiments on the spinal and facial nerves, and having seen and revised many of the papers of the latter (in some of which my name is mentioned) before their publication, my personal regard for these gentlemen induced me, as soon as I saw this statement, to write the following letter to Dr. Mc Donnell.

"26, Grosvenor Street, London,
August 15*th*, 1868.

"Dear Sir,

"I do not know whether the report of your paper relative to Sir Charles Bell's and Magendie's claims to the discovery of the functions of the spinal nerves, contained in the *Lancet* and *British Medical Journal* of last week, is correct and complete; but, if it be so, I will venture, from personal knowledge, to say, that I do not think that you have done that justice to Bell's share in these discoveries which you desire, when you assign the whole merit to Magendie.

"It is not sufficient to look at Bell's opinions in 1811, when his original

essay was printed; but close attention must also be paid to the result of his experiments and investigations when he again took up the subject, and especially in 1821, when I myself assisted him, and his brother-in-law, Mr. John Shaw, in almost all that they were then engaged in relative to the functions of the nerves.

"It is not even sufficient to study, by themselves, Sir Charles Bell's own papers in the *Philosophical Transactions* of 1821 and 1822; but it is equally, if not more, necessary to look for an exposition of Bell's opinions in a rapid succession of papers by John Shaw, in his *Manual of Anatomy* published in September 1821; in his papers in January and April 1822 in the *Journal of Science and Art*—all published before Magendie's experiments; in his paper in the twelfth volume of the *Medico-Chirurgical Transactions*, read in April, 1822, before Magendie's experiments, but perhaps not published quite so soon, as one of the papers contained in the volume was not read at the Society till June 11th; and in his papers in October and December 1822, in the *Medical and Physical Journal*, just after Magendie's first brief account of his experiments published in the July number of his *Journal de Physiologie* tome. xi, p. 279.

"A considerable part of Bell and Shaw's papers was published in Magendie's *Quarterly Journal* before Magendie's experiments were published; and Mr. John Shaw was in Paris in 1821, and there performed Bell's experiments on the fifth and seventh nerves for Magendie's satisfaction, who gives his own account of them, and of his conversations with Shaw on the subject, not only of these nerves themselves, but of their relations with the whole system of nerves, including the spinal nerves, and the great fact, so much insisted on by Bell, that different endowments are joined together by different nerves being included in one sheath.

"In July or August, 1822, appeared Magendie's first paper, in which he repeats Bell's previously expressed opinion, that the anterior and posterior roots of the spinal nerves have different functions; and adds, 'les postérieures paraissent *plus particulièrement* destinées á la sensibilité, tandis que les antérieures semblent *plus spécialement* liées avec le mouvement.' He was too cautious a physiologist to express himself with perfect confidence as to this division of their functions.

"In the next number of his *Journal*, October, 1822, Magendie says he supposed he had been the first to think of cutting the roots of the spinal nerves; but that he had been undeceived by a paper (that of the preceding April, read at the Medico-Chirurgical Society, vol. xii, p. 146, *et seq.*), which Mr. Shaw had sent him, and also a copy of Bell's original essay; but he still claimed to have established, in a more positive manner, the motor and sentient qualities of the two roots. If, however, like yourself, he found Bell's own expressions, which he quotes, ambiguous, so that Bell was only 'bien

pres de découvrir les fonctions des racines spinales,' he might have gathered from Shaw's paper that Bell had clearly ascertained that *the anterior roots conveyed the power of motion to the muscles;* although it is doubtless true, as Shaw acknowledges in this, the latest paper before Magendie performed his experiments, that the functions of the posterior roots were still uncertain, in Bell's opinion; 'from the violence necessarily used, it has been difficult to ascertain which of the filaments bestows sensibility on the part.' (P. 148.)

"One experiment was performed by Sir Charles Bell and Shaw, in which I assisted, in March 1821, at least fifteen months before Magendie's paper was printed; and I naturally prefer my own account of the result, written for Mr. Shaw, which was contained in his paper of October 1822, in the *Medical and Physical Journal*, vol. xlviii., p. 346.

"'The spinal marrow was exposed immediately after death, while some of the muscles still had a slight convulsive motion. Upon irritating the posterior root of the spinal nerves in three or four places, no effect was produced on the neighbouring muscles; but when the anterior root singly, or the whole nerve, was pinched by the forceps, or pricked by the scissors, an evident motion was produced in the muscles, not only perceptible to the eye, but when the third or fourth nerve was touched, the whole scapula was moved in the hands of an assistant. The motion was not communicated to the muscles, when the ganglion, which is formed on the posterior root within the sheath, was touched; neither did it follow on injury of the posterior column of the spinal marrow. Whether an injury of the anterior column of the spinal marrow would produce convulsions was not ascertained, as it was not cut upon till the irritability of the muscles appeared to be exhausted. The motion given to the muscles was not the slight tremulous motion arising from the natural irritability still remaining; but it was convulsive and spasmodic, and followed each successive prick of the scissors.'

"In 1856, as President of the Royal Medical and Chirurgical Society, it was my duty to notice Magendie's death within the preceding year; and I beg to refer you to my address, which was published in the *Lancet* of March 15th, 1856, p. 282, for a brief but impartial account of the respective portions of credit due to each of these distinguished physiologists. (*See ante*, p. 24 *and seq.*) In this address I showed the reasons why Bell, having distinctly and clearly localized the source of motor power, had failed to ascertain with certainty the seat of sensibility; especially his theory regarding the dependence of both sensation and motion on the cerebrum, and anterior columns of the spinal marrow, and anterior roots of the spinal nerves, as connected with animal life; and the supposed influence of the cerebellum, posterior columns of the spinal marrow, and the ganglionic roots of the spinal nerves on the organic life of animals. Bell's renewed investigations about 1821 led to the further distinction in his mind of the relation of the lateral tracts

of the spinal column, and the irregular nerves, to the function of respiration, which views, unfortunately, led to his earliest mistakes as to the functions of the fifth and seventh nerves of the face.

"Let me, also, point out to your notice a very elaborate history of the whole subject, by a reviewer, in the ninth volume of the *British and Foreign Medical Review* for 1840; which, according to my recollection—I read the account many years ago—is, on the whole, very fairly and correctly drawn up.

"I trust that the interest which you have shown on this subject, and the importance of the truth being clearly known, will lead you to excuse the unexpected length of this letter.

"I am, dear Sir, very truly yours,

"CÆSAR H. HAWKINS.

"To Dr. Robert McDonnell, F.R.S."

Having been favoured with several communications from Dr. McDonnell, I am happy to bear testimony to the great fairness and candour and gentlemanly spirit which he has shown in all of them. In a letter in the *British Medical Journal* of September 19th, he acknowledged that he may "have given too much weight to the testimony offered by Sir C. Bell's pamphlet of 1811," and informed the public that Bell's essay would be republished in the November number of the *Journal of Anatomy and Physiology*. This has now been done; and it has been accompanied by some very interesting extracts from Bell's early letters relating to his thoughts for many years on the subject of the nervous system, and also by comments by my friend, Mr. Alexander Shaw, which, in relation to the spinal nerves, correspond in the main with my own knowledge of the subject, and in a higher degree than his letter of August 15th.

Dr. McDonnell has recently informed me that he does not now intend to publish his paper which he read at Oxford. He has been led to this determination, partly because Bell's pamphlet of 1811 is again placed before the public in such a shape that physiologists are enabled to form their own conclusions, and partly from the conviction that in his paper he did not do full justice to the share which Mr. John Shaw had in this discovery. Dr. McDonnell has, therefore, given up the intention, which he at first entertained, of publishing his own paper, together with Bell's essay and my letter to himself, and with references to various other papers relating to this subject; and he is kind enough to express an opinion that, a renewed interest being felt on this question, my letter to him, or any other statement from me, would, on account of my personal knowledge, be very acceptable and important.

I have been at all times reluctant to enter into controversy on this or

other subjects; but I must confess that, when a physiologist like M. Bernard asserts that "to attribute the whole discovery of the functions of the spinal nerves to Charles Bell is the height of injustice," he is, in my opinion, equally wrong when he says "that the honour of the demonstration of the functions of the spinal nerves belongs entirely to Magendie" (*Rapport sur les Progrès et la Marche de la Physiologie en France*, 1867, pp. 14-156). It is not improbable that M. Bernard's opinion might have been modified if he had been better acquainted with Mr. John Shaw's writings, previously mentioned, as exponents of his relative's investigations; nor could he have implied a half-doubt whether the experiments described by Charles Bell in his essay had ever been performed (p. 156), if he had known that a description of one of them, written by myself, an eye-witness of the fact, in March, 1821, had been in Mr. Shaw's possession fifteen months before Magendie's experiments were performed, although not in print till two months after Magendie's first paper on the spinal nerves was published.

To complete my history of this matter, I will venture to add a portion of what I addressed to the Royal Medical and Chirurgical Society regarding Magendie's experiments on the spinal nerves, without entering into the equally misunderstood subject of the facial nerves, which I also briefly discussed on that occasion (*Lancet*, March 15th, 1856. See also preceding Address, p. 25, etc.).

"For how much, then, are we indebted to Magendie for what we know of the functions of the spinal cord and nerves? First, and above all, it is unquestionably (as between these parties) to Sir Charles Bell that the palm of originality must be assigned. It was by him that the true method of investigation was commenced; and it is not, therefore, without some justice, that the completion of the investigation is also generally called by his name. That nerves possessed different endowments according to their several sources in the central organs, and their different roots;* that one set were regularly double-rooted and symmetrical, and another set as constantly single-rooted and irregular, and superadded to the former; that each of the double-rooted nerves was connected with both great divisions of the brain, with the cerebrum through its crura, the anterior columns of the spinal marrow, and anterior roots of the spinal and fifth nerves, and with the cerebellum through the crura cerebelli, posterior columns of the spinal marrow, and posterior or ganglionic roots of the spinal and fifth nerves; that with the cerebrum and its extensions were connected the nerves of motion going outwards, and the nerves of touch and sensibility going

* In Bell's own words: "The nerves of sense, the nerves of motion, and the vital nerves are distinct through their whole course, though they seem sometimes united in one bundle; and they depend for their attributes on the organs of the brain, to which they are severally attached."—Bell's Essay, republished in *Journal of Anatomy and Physiology*, Nov. 1868, p. 154.

inwards from the body or viscera ;* and that by the cerebellum and its posterior prolongations and nerves were regulated the secret operations of the bodily frame, and the connections which unite the parts of the body into a system ;† all this formed a grand and comprehensive theory of the most attractive kind, which was tested by experiment before 1811,‡ was then nearly dormant for ten years, and revived with renewed impetus when I was myself a pupil.

"That the two roots of the spinal nerve possessed different properties, was soon ascertained by these experiments; and also that motion depended on the anterior roots, and that convulsions ensued from irritation of these roots, and not of the posterior. But the imperfect knowledge of the curious effects of reflex action, as now understood, prevented the recognition of the true significance of the facts we witnessed, and made the source of sensation obscure and doubtful, and at first appeared to confirm the ingenious though erroneous theory of Sir Charles Bell.

"Before these doubts were solved, Magendie performed his experiments on the roots of the spinal nerves, and published the results in August of the following year (1822), and thereby clearly established that the posterior roots of the spinal nerves and posterior columns of the spinal marrow were much more connected with sensation than the anterior (*Journal de Physiologie* t. xi., p. 279, etc.). This fact he subsequently corroborated by means of galvanism and strychnine, though he never ventured to assert, as some have said for him, that either motion or sensation belonged to either root exclusively. It is by other physiologists since his time that this has been asserted.§

"Such, then, was the partial correction of Sir Charles Bell's experiments by Magendie, who was led to their performance, doubtless, by knowing the experiments on the facial nerves already begun in this country. But there is not, as it seems to me, the least ground for the imputation of unfairness, or of his having been acquainted with Sir Charles's experiments on the spinal nerves through either private or published information. So far from this, Mr. John Shaw himself says in October, 1822, two months

* Bell's own expression is: "The cerebrum I consider as the grand organ by which the mind is united to the body. Into it all the nerves from the external organs of the senses enter, and from it all the nerves which are agents of the will pass out."—Bell's Essay, republished in *Journal of Anatomy and Physiology*, Nov. 1868, p. 163.

† "The nerves proceeding from the crus cerebelli go everywhere (in seeming union with those from the crus cerebri); they unite the body together, and control the actions of the bodily frame, and especially govern the operations of the viscera necessary to the continuance of life."—*Ibid.*, p. 162.

‡ "Though they were not conclusive."—*Ibid.*, p. 160.

§ I have already quoted Magendie's own words, in his paper of August 1822 (*see ante*, p. 32); and in October, he also says: Le sentiment n'est pas exclusivement dans les racines postérieures, non plus que le mouvement dans les antérieures."—*Ibid.*, p. 368.

afterwards, 'In the last number of the *Journal de Physiologie*, several very curious experiments are related by M. Magendie, which are not only important in themselves, but are interesting, as they corroborate some experiments which had been previously made in this country, but of the performance of which M. Magendie does *not appear to have been aware*.' (*London Medical and Physical Journal*, vol. xlviii., p. 343, October 1822, after Magendie's first paper). He then gives a translation of Magendie's paper, and adds: 'The importance of the facts *discovered* by these experiments must be evident to every one; and it must be gratifying to the true friends of science in this country to find that M. Magendie, whose sole object in these pursuits appears to be the promotion of physiology, has by his experiments come to the same conclusions as those which had been previously deduced by Sir Charles Bell from observations made on the brain and spinal marrow. The truth of these deductions was also by him put to the test of experiments, the results of which, though they correspond with those of M. Magendie, were *not so conclusive*.' (*Ibid.*, p. 344.)

"Finally, of our experiments in Great Windmill Street, he says: 'It has been difficult to ascertain which of the filaments bestows sensibility on the part. It was easily shown that if only the posterior set was destroyed, the voluntary power over the muscles continued unimpaired; but the pain necessarily attendant upon the performance of the experiments prevented us from judging of the degree of *sensibility* remaining in the part.'" (*Medico-Chirurgical Transactions*, vol. xii., p. 148, read April 1822, before Magendie's first paper.)

I then mentioned, among the reasons for Bell's *not so conclusive a result*, his great dislike to inflict pain, leading him to expose three or four spinal nerves only, while Magendie exposed the whole spine to his observation.

It is evident from these expressions that Magendie is altogether acquitted by Mr. John Shaw of plagiarism, and that in his visit to Paris in the previous year, 1821, although Mr. Shaw had made him fully acquainted with Bell's general views, especially with regard to the facial nerves, then misunderstood by all, he could not expressly have described Bell's experiments on the spinal nerves. He acknowledges the superior precision and importance of Magendie's experiments, and uses the same term after Magendie's paper, as he had done shortly before them, and as Bell had himself done in 1811, viz., that the experiments in this country were *not so conclusive*.

This paper, written in October 1822, while the whole of the circumstances were recent and clear in his mind, demonstrates the candour and truthfulness of my excellent teacher, in not claiming for Bell and himself greater credit than they were entitled to. It is important also to notice that John Shaw's tribute to the value of Magendie's recent paper on the spinal nerves, was

written after the obscurity regarding the distribution and double office of the fifth nerve had been cleared up by Mayo (Mayo's *Commentaries*, vol. i., p. 107, August 1822), and by J. Shaw himself (*Medical and Physical Journal*, vol. xlviii., p. 342, October 1822), and the errors thus corrected, into which Sir C. Bell had previously fallen; by which corrections a far clearer view of the whole of Bell's class of symmetrical nerves had been obtained. He makes no claim to the discovery, positively, of sensation residing in the posterior roots of the spinal nerves, at the very time when he would naturally have done so, if he desired it; nor am I aware of such a claim in precise terms by any one on behalf of Bell till 1824.

P.S.—December 22nd. A friend has this day sent me the October number of the *New York Journal of Psychological Medicine and Jurisprudence*, containing a paper by Professor Austin Flint, entitled "Historical considerations concerning the Properties of the Roots of the Spinal Nerves," which is drawn up with great care, and with ample references to English and continental writers; and it so entirely coincides with what I have written from my own knowledge, that if it had appeared earlier in this country, I should have taken no part in the matter.

ANNUAL ADDRESS

DELIVERED BEFORE THE

FELLOWS OF THE ROYAL MEDICAL & CHIRURGICAL SOCIETY,

On Monday, March 2nd, 1857,

By CÆSAR H. HAWKINS, F.R.S.,
PRESIDENT.

Gentlemen,—The Report of the Council is so ample, that there is only one subject, on which, in this address, which usage demands from your President, I shall offer any remark—namely, the recommendation, which you have just adopted, sanctioning the future meetings of the Pathological Society in our rooms.

I had the honour of being one of its earliest vice-presidents, and, subsequently, its president, and have seen with great pleasure its uniformly increasing utility, and the great storehouse of valuable information contained

in its "Transactions," and have often regretted that there has never been a more intimate union between us, so that this useful and vigorous association might rather have looked upon us with affection as its parent, than simply as an ally in the cultivation of medical science. I am, therefore, glad to witness, at least, the proposed degree of approximation, in which each, however, must separately proceed in its own allotted sphere of usefulness.

There is one feature in the Pathological Society, in which it differs from our own, and which it has borrowed from the customs of our continental neighbours. In each of our volumes is a notice that "the Society does not hold itself responsible for the statements, reasonings, or opinions set forth in the papers," which we publish, although, perhaps, successfully controverted, or left doubtful in our discussions. The reference of some of our papers to a committee to test the validity of the doctrines, or supposed facts, contained in them, would undoubtedly sometimes add greatly to their value; and, although there are some difficulties which would require mature deliberation before the plan was finally adopted, yet the marked benefit with which it has been worked in the Pathological Society appears to me to render the scheme deserving of attention by the Council and Fellows of this Society, and to justify my allusion to it at the present time.

I was requested at the last Annual Meeting, to communicate to you the intention of the Council to introduce another novelty in the separate publication of our Proceedings, so as, nevertheless, not to interfere with the "Transactions." It was intended that the first number should have been in the hands of the Fellows some weeks ago, but some delay took place, chiefly connected with the printing of a plate. It is placed before us, however, to-day; and I hope, from what has been said by Dr. Burrows, you will continue to approve of the step, which shows, at least, that the Council are not indisposed to innovate, when they think it advantageous or agreeable to the Fellows; and may, perhaps, induce them to think of the proposal I have ventured to offer.

I next proceed to the customary, but unsatisfactory duty, of laying before you the losses which the Society has sustained since our last anniversary.

From the resident Fellows one only has been removed, — Mr. William Randall Vickers, who completed his education in 1822-3, and who occupied for many years a highly respectable position in general practice in Baker Street, and who died on the 12th of August, 1856.

Among the non-resident Fellows not less than seven have died, or rather their deaths have become known to me, within the past year.

On February 20th, shortly before our last meeting, died Mr. Thomas Salter, of Poole, in Dorsetshire, a Member of the Royal College of Surgeons in 1810, whose professional reputation induced the Council of that body to place him among the Fellows selected by them in 1844, and whose social

position and estimation among his fellow-townsmen were shown by his magisterial office, and by the influence, moral and political, which he is said to have exercised. That he laboured zealously and laboriously in his professional pursuits is evident from his having collected an anatomical and pathological museum, notwithstanding the distractions of an extensive country practice; and his taste for science collateral to our technical pursuits is evinced by his having been a Fellow of the Linnean Society. Mr. Salter may be said to have expired in harness, for it appears that he was on his way to visit some sick poor, after his day's labours, when sensations of illness induced him to resort to a friend's house, where he died, at the age of seventy, before his family could reach him. Mr. Salter contributed three papers to our "Transactions." One is on the "Use of Arsenic in Chorea;" a second describes very clearly the occurrence of secondary cancer, causing fracture of the thigh-bone, with which most surgeons are now familiar, and which I have myself seen on both sides in the same person; and the third gives an interesting account of extensive suppuration in the substance of the heart in acute carditis.

On April 4th, prematurely cut off in the prime of life, died Mr. Frederick Field, of Birmingham, where he was buried, though his death occurred at Bournemouth, to which place he had gone on account of his failing health. He became a Member of the College of Surgeons so late as 1843, and promised, as I am informed, to have done honour to the school of Birmingham, in which he was educated. Mr. Field contributed a paper to vol. xxxiii. of our "Transactions," describing a case in which he successfully performed Amussat's operation for obstruction in the sigmoid flexure of the colon, which the patient survived fifteen months.

Mr. John Pryor Peregrine was a Fellow of this Society for thirty-seven years, during the greater part of which time he was in extensive practice in London, and was formerly a member of our Council. After becoming a Member of the College of Surgeons, in 1803, Mr. Peregrine served for two years in the Royal Horse Artillery, before he began practice, in 1807, in conjunction with the late Dr. Merriman, becoming a Member of the Apothecaries' Society in 1809. Mr. Peregrine retired in 1846, and died in Jersey at the age of seventy-three, on the 27th of April. A friendship of nearly thirty years enables me to express my sense of his valuable qualities and amiable manners, and of the strong feelings of regard which his kindness and attention procured for him from those who trusted to his skill and experience.

On the 4th of June, which the older Fellows of the Society may recollect as the national commemoration day of the birth of King George the Third,

died Sir Alexander Crichton, who was born at the very commencement of that monarch's long and eventful reign, on the 2nd of December, 1763, and died last year, at the age of ninety-three.

How we are carried back into the realms of history, in contemplating the career of one, who, after having been apprenticed in Edinburgh, came to London to study anatomy in the year 1784, and was examined for his doctor's degree at Leyden, in 1785 ; who studied in Paris before the commencement of the French Revolution ; who next prosecuted his studies for three years in various parts of Germany, an inmate for part of the time with the second Meckel; and who then became a Member of the old Corporation of Surgeons, in 1789 !

This extended education presented advantages calculated to form an accomplished practitioner; nor were they lost on Dr. Crichton, who, having deserted surgery, and become a Licentiate of the College of Physicians in 1791, endeavoured, as physician to a dispensary, and afterwards to the Westminster Hospital, to which he was elected in 1796, to disseminate the knowledge he had acquired, by lecturing on chemistry, materia medica, and the practice of physic, and especially by introducing that system of clinical lectures which he had witnessed on the Continent, and which, half a century afterwards, had scarcely become general in England, as one of the most valuable and instructive parts of medical and surgical education.

Having been appointed Physician to one of our own Royal Family, the Duke of Cambridge, our late Fellow next joined, in 1803, as Physician to the Emperor, that band of our Scottish brethren — the Crichtons, Wylies, Leightons, Greigs, and Elphinstones—who, for several generations, have formed and kept up the medical and naval establishments of the vast northern empire with which we have so lately measured our strength. His energy and skill won for him also the place of head of the Civil Medical Department of Russia, and the value of his services, in connection particularly with those epidemics which are so common and so frightful in half-civilized countries, as well as in the foundation and management of numerous charitable institutions, were gratefully acknowledged. Dr. Crichton enjoyed for thirty years the confidence of the late Emperors Alexander and Nicholas, by whom he was decorated with successive crosses of knighthood of St. Vladimir and St. Anne ; he had also that of the Red Eagle from the King of Prussia, whose court he visited in 1819, having been summoned to attend the present Empress Dowager, during his temporary stay in this country. Sir Alexander was knighted in 1821 by George the Fourth, with permission to wear those civil decorations of which continental sovereigns have long thought the healing art not undeserving, but which even the most exalted of our profession in these realms cannot exhibit as a stimulus to the ambition of their juniors.

Sir Alexander was for fifty-six years a Fellow of the Royal Soeiety, and was a member of several other learned soeieties in this country and abroad. He published a translation of "Blumenbaeh on Generation," in 1792, and a work on "Mental Derangement," in 1798, whieh proeured for him eonsiderable reputation on that subjeet, though it is rather metaphysieal than praetieal; he endeavoured, in 1817 and in 1823, to introduce into the treatment of eonsumption the vapour of boiling tar; and in 1842, when in his seventy-ninth year, as he observes in his prefaee, he wrote "Commentaries on some doetrines of a dangerous tendeney in Medieine, and on the general prineiples of safe treatment," whieh apply partieularly to the subjeet of fevers.

On September 6th, at Madeira, died Dr. Arehibald Colquhoun Ross, who obtained his lieenee from the College of Surgeons of Edinburgh, in 1829, but was obliged to repair to Madeira in the following year, on aeeount of the failure of his health, where he praetised during most of his life, having attempted in 1848-9 to praetise as a physieian in London, but being unable to support the rigour of our elimate. After the expulsion of Dr. Reilly from Madeira, for attempting the religious conversion of the Roman Catholic residents, Mr. Ross was obliged, with other foreign praetitioners, to repair to Lisbon for a lieenee to praetise, and there he obtained after examination, a doetor's degree in medieine.

Dr. Ross has given no written proof of the aequirements he was said to possess; but he has left, aeeording to the evidenee of a friend, who is himself a man of the same stamp, a brilliant example of that steady devotion to the path of duty whieh is, I trust, not unfrequent in our profession, and whieh has often been observed in persons of every elass, in whom, as in Dr. Ross, the physieal powers appear unequal to brave exertion and danger. When Dr. Ross had resided three or four years in Madeira, with inereasing praetiee, a eonviet-ship arrived, bound for New South Wales, whose surgeon had eommitted suieide a few days previously. The Consul was applied to by the captain for assistanee, to prevent the neeessity of his return to England, on whieh Dr. Ross immediately volunteered to take, what is at all times an anxious and very responsible charge, in addition to the medical duties of the ship. On his return from Australia, he remained at St. Helena to supply the plaee of one of the East India Company's surgeons, who wished to go to England on furlough; and the presentation of a pieee of plate to Dr. Ross by the governor, General Dallas, shows the sense he entertained of the manner in whieh his duties were performed. Finally, while Dr. Ross was in this country for a short time last year, cholera commeneed in a virulent form, in July, in Madeira, on whieh Dr. Ross immediately repaired to the seene, where he arrived on August the 30th, and, after great professional exertions, fell a vietim to this disease on the same day of the following

week. His motive for his return to the island was thus expressed to a friend on the day after his landing: "Should it please God to take my life in this service, I trust my wife and family will bow with submission, and feel that my duty called me. A doctor has no choice in such cases."

I have said that I trust such sentiments are not uncommon amongst the members of our profession, whether in military or civil life. Yet with what jealousy are the military distinctions, now for the first time conferred on the medical departments of our military and naval services, regarded by their brother-officers in the same service, though their dangers and hardships are no less than theirs, and encountered not grudgingly or without a full knowledge of their nature. It was not so when the mere presence of Ambrose Paré was sufficient to save a beleaguered town! If I mistake not, it was to Wallenstein, whose troops had just surmounted a rising ground that brought them within reach of the enemy, that it was remarked how firmly his raw recruits bore the cannonading they for the first time encountered. "Ah! old friend," was his reply, "it is to you and me that credit should be given for courage, who know so much better than they do the effect of these balls that are playing among us." And do not we know what are the daily risks of our lives, whether in a civil or a military career, although neither glory nor honours may await our victories over injury and disease? the noxious and infectious air of the sick-room or the hospital ward; the poisonous secretions with which we daily come in contact, often more dangerous in the living than the dead; the depressing influence of late hours and hurried meals; and all the anxieties and harassing fatigues of practice, where life and death are the alternative with which our skill and judgment and decision are concerned?

On November 19th, died Mr. Charles Bruce Warner, who was a Fellow of this Society for the long period of forty years. Having become a Member of the College of Surgeons in 1809, Mr. Warner practised for many years, with credit, at Cirencester, in Gloucestershire, from which, however, he had retired for a considerable time before his death.

Dr. Daniel Chambers Macreight was educated in his native country, at Trinity College, Dublin, where he obtained the degree of Doctor of Medicine, which he also procured *ad eundem*, at Oxford. Dr. Macreight was a Fellow of the College of Physicians of London, and practised for some years in the metropolis, during part of which time he attended the Infirmary of Marylebone Workhouse, and gave lectures on botany at the Middlesex Hospital. He was an occasional contributor to the medical journals, but retired many years ago to St. Helier's, in Jersey, where he died on December 10th, 1856.

On August 15th, died, at the age of 72, one of our English Honorary Fellows, the very Rev. Dr. Buckland, Dean of Westminster, whose untiring energy and laborious investigation of the earth's structure, in various parts of the United Kingdom and on the continent of Europe, have done more for the foundation and encouragement of geological science than those of any other man, of which ample proof is afforded by the number and variety of his writings, of which a list, published by Agassiz, amounts to not less than sixty-six. Dr. Buckland is an example of the devotion of a whole life to a favourite pursuit, for he is said, while still a child, to have been struck by the *Cornua ammonis* of the rocks of Devonshire, and to have collected the sponges and other fossils of the chalk round Winchester, where he was at school ; and from the time he entered the University of Oxford, in 1801, the fertile strata of Oxfordshire were searched with never-ceasing diligence,—whether as a scholar of Christ Church, or when admitted a Fellow of that College in 1808,—or when appointed a Canon of Christ Church in 1825, where he resided till he was raised by Sir Robert Peel, in 1845, to the Deanery of Westminster.

Appointed, in 1813, Reader in Mineralogy, in succession to Dr. Kidd, his highly popular and attractive lectures on that subject were so joined with the new discoveries and theories of geology, that the University established a new professorship on the latter science especially for Dr. Buckland, and in both these branches of knowledge he annually delivered a course of lectures as long as his mind could work at all.

In holy orders, and yet an ardent geologist, while the science was still in its infancy, it naturally fell to Dr. Buckland's pen to vindicate the consistency of geological discoveries with natural religion on one hand, and with the Mosaic account of the Creation on the other ; and his "Vindiciæ Geologicæ," published in 1820, and the second chapter of his "Bridgewater Treatise," published in 1836, contain the various reasonings considered necessary to appease the religious fears of the public, of the depth and extent of which scarcely an idea can be formed, now that the truths of geological discoveries have received the stamp of mature investigation.

Dr. Buckland was elected a Fellow of the Royal Society in 1818, and was on its Council from 1827 to 1849, and received in 1822 their Copley Medal, for an "Account of an assemblage of Fossil Teeth and Bones of Elephant, Rhinoceros, Hippopotamus, Bear, Tiger, Hyena, and sixteen other animals, discovered in a cave at Kirkdale, in Yorkshire." This was expanded into his delightful "Reliquiæ Diluvianæ," the publication of which, in 1824, gave an immense stimulus to geological pursuits throughout the world.

Dr. Buckland naturally became one of the earliest members of the Geological Society, and was, as naturally, twice its President, and contributed largely to its "Transactions" and "Proceedings."

It is not my place, however, to dwell on Dr. Buckland's merits as a geologist, for it is, I presume, the connection of geology with comparative anatomy and physiology, and through them with our profession, which induced the Council, in 1825, to recommend him as an Honorary Fellow of this Society.

That Dr. Buckland was a diligent student of human and comparative anatomy and physiology is proved by the information given me, among other things, by my friend and former pupil, Mr. Francis Buckland, of the existence at the present time of his manuscript notes of two courses of lectures, given in 1810 and 1811, by Sir Christopher Pegge, and afterwards of lectures given by Drs. Kidd and Ogle, who succeeded Sir Christopher as Regius Professors of Medicine in the University of Oxford; and that he was also a constant note-taker at the lectures delivered by Mr. Owen, as Professor of Comparative Anatomy in the Royal College of Surgeons.

As a comparative anatomist, Dr. Buckland and the late Mr. Clift were long consulted as the chief authorities in palæontology, by whose decisions the supposed examples of exhumed bones of deceased giants were transformed into those of a modern ox, or an antediluvian ichthyosaurus. Of his sagacity and readiness of conjecture, and the ingenuity with which he followed out to their consequences the relation of one fact or discovery with another, in anatomy or physiology, many examples might be given. The magnificent skeleton of the mylodon is a beautiful instance, in which his reasoning on the probable use of the enormous air-cells between the tables of the skull, in connection with the trees it uprooted, was confirmed by the safety of the real covering of the brain, and the recovery of this huge creature from enormous fractures of the outer table received we know not how many thousand years ago.

It was but the necessary tribute to his eminence in these sciences, that on his becoming a resident of the Deanery at Westminster, Dr. Buckland should be appointed a trustee of the British Museum, and also one of the trustees of the Hunterian Museum at my own College, where he was a frequent donor and visitor, as well as at the Museum of Practical Geology in Jermyn Street, which is greatly indebted to his exertions.

Dr. Buckland, however, was not only interested in palæontological, or, as he called it, cave-bone surgery, but I have heard him express in warm terms his estimation of our profession of the present time. In 1849 he distributed the prizes to the successful competitors among the students at St. George's Hospital, and I have before me the notes prepared by him for some observations on every subject of medical study for the benefit of the pupils, which, from so eminent an example of persevering industry, must, I doubt not, have produced a lasting impression on the young men who received their prizes from his hands.

Among his honorary titles was that of Doctor of Medicine of the University of Bonn, which Dr. Buckland said was an unexpected honour, given, as he conjectured, on the supposition that his profession was that of an English doctor of medicine. In truth, however, no physician could have been more zealous and active than was the late Dean, in promoting sanitary measures in Westminster. On the 15th of November, 1849, the Thanksgiving Day for the cessation of the cholera of that year, he preached a sermon on the necessity of sanitary reforms, which he published, and in this he gives credit to those of his own profession and of ours, "in London and in the provinces, who nobly and honourably died at their post of duty, a sacrifice to excessive fatigue and anxiety in visiting their patients and parishioners." It was one of the latest of his own works, for shortly afterwards a cloud passed over him which separated him from the world, till he finally rested from his labours.

Among our foreign Honorary Fellows, since the year 1841, was Dr. John Collins Warren, who died, full of years and honours, on the 4th of May, 1856, after a distinguished career, particularly as a remarkably bold and skilful operator, at Boston, in America. Born on the 1st of August, 1778, he obtained his doctor's degree at Cambridge, in the United States, in 1797, at the early age of nineteen, after which he pursued his studies in Europe, chiefly in this metropolis, for several years. Of this part of his life he speaks, forty years afterwards, with grateful recollection, in the dedication of his chief work—that on Tumours—to Sir Astley Cooper; and he appears, in more than one visit to this country, to have cherished much filial affection for England. Soon after his return to his native country he was appointed Adjunct-Professor of Anatomy with his father, who was a distinguished Physician in Boston, and whom he succeeded, in 1815, in the Hersey Professorship of Anatomy and Physiology in Harvard University, which he retained for the long period of thirty-two years, and on his retirement, at the age of sixty-nine, he became Emeritus Professor.

In conjunction with Dr. Jackson, he established and organized the Massachusetts General Hospital, with which he was connected, as attending or consulting surgeon, till his death; and there for many years he conducted the operations "alone and comparatively unassisted, and undertook on his own decision and responsibility, operations of a severity and magnitude not common even at this time." His work on Tumours, published in 1837, though not well arranged and systematized, contains an account of many remarkable operations, and well deserves the attention of every operating surgeon for details, illustrating the boldness, and skill, and success with which they were performed.

One remarkably difficult and successful case is recorded by him in

vol. xxix. of our "Transactions," in which an enormous aneurism formed and burst in the axilla, after a surgeon had reduced a dislocated humerus with his boot on, and in which Dr. Warren tied the left subclavian artery where it lies under the scalenus anticus muscle, which he partly divided. He has published also, in vol. xxvii., a curious case of gelatiniform cancer in almost every organ of the body.

Many of Dr. Warren's professional writings were published in medical journals, particularly in the "New York Journal of Medicine," of which he was joint editor; his last paper, in May, 1855, was a singular case of dislocated and anchylosed hip and other joints, in which he divided the thigh-bone below the trochanters, in 1849, and which I allude to because, although it may appear strange to Englishmen, the patient, with his crutch and stick, attended Dr. Warren's funeral, taking a last look at his countenance, with the friends of the deceased and the public, after the funeral service had been performed.

Our library contains many of Dr. Warren's publications, of very varied character, and most of them with plates: "On Organic Diseases of the Heart;" "On the Sensorial and Nervous Systems in Men and Animals;" "On Tumours;" "On an Egyptian Mummy;" "On the Physiological Effects of Alcoholic Drinks;" "On Etherization;" Addresses to several Medical and Scientific Institutions.

On his retirement from active professional pursuits in 1847, Dr. Warren resumed with remarkable ardour the study of the natural sciences, particularly those of geology and palæontology; and his museum is said to have been very rich in this subject, as well as in comparative anatomy and physiology. He published, in 1852, a splendid quarto volume, full of plates, which he distributed liberally to scientific libraries, our own among the number, on the *Mastodon giganteus* of America, of which animal a nearly perfect skeleton was found in 1845, in a remarkably dry season, in a still swampy district, in which the huge creature appeared, from the position of its limbs, to have perished while trying to extricate himself from the marsh; it was found about four feet below the surface, and came shortly afterwards into Dr. Warren's possession. We possess also his "Remarks on some Fossil Footprints of various Animals in the Sandstone Rocks of Connecticut River."

Dr. Warren's pursuits, however, in later life, were not only among the antiquities of the antediluvian world. A friend, one of my predecessors in this chair, has kindly lent me an expensive and highly ornamented work, printed by Dr. Warren in 1854, the subject of which is "The Genealogy of the Warrens." It commences with an unnamed Danish knight, whose daughter married Richard Duke of Normandy, whose great grandson was William the Conqueror; while in the male line descended in the third

generation an Earl of Warren in Normandy. The son of this earl was Earl of Warren and Surrey in England, and married the daughter of the Conqueror, and from them the genealogical tree descends with perfect regularity to Dr. Warren's own grandchildren! This curious work contains portraits of Dr. Warren himself and of his father, with views of their American residences, together with views of churches and buildings connected with his ancestry in Devonshire, and of the Castle and other ruins at Lewes, in Sussex, built by his ancestor the son-in-law of our Norman Conqueror!

It is possible that there may have been some relation between the state and turn of mind which led to these heraldic and monumental researches in different parts of England, and the singular directions of Dr. Warren's will, which were strictly carried out.

After his decease, from cancer of the stomach, ascertained, as he had desired, by inspection, his funeral obsequies were conducted with great publicity, eight senior members of the medical profession being pall-bearers, and eight others acting as hearse-bearers; and the body was followed by his family and relatives from the chancel to the tomb. After this the body was removed, and the bones were macerated in order to be articulated and hung up in the Medical College of Boston. The interest of 1000 dollars has been appropriated to keep the tomb in perpetual repair, although empty, and 1000 dollars has been left for the publication of his biography. I know not whether the latter task has yet been performed.

His could, however, have been no common character, to whose merits as a surgeon and a man, after making allowance for private friendship, or warmth of feeling arising from the recent loss of a valued teacher, such testimony could be borne at a public meeting as is contained in these resolutions:

"Resolved—That as members of the medical profession we express our sense of the great loss we have sustained in the death of one of its most distinguished members, who, by his natural gifts, his large acquirements, his indefatigable zeal, his untiring energy, his devotion to his calling, has raised the standard of professional excellence, and commanded the respect and confidence of his brethren throughout the country.

"Resolved—That as members of this community, we recall with gratitude the many benefactions he has bestowed upon its public institutions, the labour he has devoted to its charities, the influence he has contributed to its various efforts for moral improvements, the Christian virtues he has exemplified in his life, and all that makes his example a guide to those who follow him in the same range of duties, or in any position of labour and responsibility." *

* *American Journal of Medicine*, October, 1856, p. 288.

I cannot conclude without thanking the Fellows of the Society very warmly and sincerely for the support they have afforded me, while holding, for the last two years, the honourable office of their President. I congratulate myself especially, and the Fellows also, on looking back to the state of the Society at no distant period, that I have never had to call for their support to the authority of this chair; but that my period of office has been marked by uniform harmony and good feeling, and strict union in furtherance of the legitimate objects of our Society, without which no association for scientific purposes can possibly prosper.

I thank the Fellows also for the number and variety of their contributions towards the several sciences connected with the practice of medicine and surgery, the first of which, during my official life, proceeded from the eminently practical pen of one whose name would be adduced, by common consent, as the fittest representative of British surgery; and the last was from one who stands as high in the surgical part of our profession in the northern part of the empire. I trust that our volumes will long continue to support their high character, not only in this country, for, as I have had occasion, in allusion to our deceased Fellows, as contributors to our 'Transactions,' to show, the reputation and usefulness of the proceedings in this room are not confined to the British Empire or to Europe.—*Proceedings of the Society.*

ACCOUNT OF SOME EXPERIMENTS ON THE USE OF STYPTICS IN HÆMORRHAGE FROM ARTERIES,

READ JANUARY 24TH, 1832.

It is probably well known to many Members of the Society, that a series of experiments have been made to demonstrate the efficacy of a new styptic, discovered by MM. Talrich and Halmagrand, in controlling hæmorrhage, which, it is asserted, has been invariably successful in Paris, but which has been less uniformly effectual in this country; since, out of five experiments, three of which were made at St. George's Hospital, and two at the London

Hospital, three have proved fatal, and in the other two the animals were killed before the time at which secondary hæmorrhage might have taken place had expired.

Most English surgeons, however, are acquainted with the ingenious experiments published by Dr. Jones, in 1805, which prove how frequently natural means alone will check the hæmorrhage from the largest arteries, and which completely explain the mode by which this is effected. Dr. Jones minutely described the external and internal coagula, which are formed singly or in conjunction, and which are principally employed as a barrier against further hæmorrhage; he showed also the manner in which *contraction* of the artery sometimes added to the security of the animal, and the circumstances under which *retraction* of the vessel at one time checked the hæmorrhage, and at another time increased it, according to the kind of wound made in the artery. Dr. Jones also explained the manner in which a wounded artery was sometimes obliterated after the operation, while at other times the permeability of the vessel remained, and the wound was completely cicatrized without interfering with the current of the blood.

When I saw all these circumstances described in the *Bulletin Générale de Thérapeutique Medicale et Chirurgicale* (Oct. 1831), as if now for the first time discovered, and attributed solely to this new styptic, I could not but suspect some fallacy in the account, and that the styptic acted only a subordinate part in arresting the hæmorrhage, and I wished to show the pupils of St. George's Hospital, who had witnessed the supposed effect of the styptic in some experiments made by MM. Talrich and Halmagrand, the real principles to which I believed those effects were to be ascribed, especially as many persons, who ought to have known better the principles by which hæmorrhage is controlled, appeared to have been deceived by witnessing these experiments. I did not hesitate, therefore, without any previous trial, to make the following experiments in the presence of a considerable number of spectators, including MM. T. and H., in full confidence that *without their styptic* I could, in by far the majority of instances, succeed in controlling hæmorrhage as effectually as if it had been employed. And as the experiments were conducted in a different manner to those of Dr. Jones's, and prove something more than his have done, it may perhaps be interesting to record their result, as a further corroboration of the means by which hæmorrhage is prevented in wounds of arteries.

In most of Dr. Jones's experiments, the free passage of the blood from the wounded artery was nearly, or completely, prevented by a continued suture in the skin, so that the blood necessarily forced its way into the cellular texture around, and there became coagulated; a method which he adopted from having found in some earlier experiments, that without this precaution the sudden loss of blood was generally fatal before the necessary

clots could be formed. The mode in which, on the other hand, M. Halmagrand conducts his experiments is to place three small tempons, or compresses of cotton dipped in his "Liquide Hæmostatique," upon the wound of the artery, and retain them there for ten minutes with the fingers, after which a *single ligature* only through the skin is employed, which does not therefore close the wound, but merely prevents the compresses from being thrown out of the wound by muscular effort; a precaution which he has found necessary during the exertion of the animal to rise, and the omission of which occasioned fatal hæmorrhage in one of his experiments at which I was present. This method I exactly imitated in the following experiments :

Experiment I.—I exposed the carotid artery of a sheep, and made in it a longitudinal wound about half-an-inch in length, and placed upon the orifice compresses of tow, of the same size as those which I had seen employed by M. Halmagrand, dipped in a decoction of *Aleppo galls* (one ounce having been boiled for ten minutes in three-fourths of a pint of water), and tied a single ligature in the skin before I withdrew my fingers from the wound. The animal was restless during the experiment, in consequence of which, perhaps, a small quantity of blood (about half-an-ounce) escaped when it rose from the ground, but none was lost subsequently. The compresses were taken away on the second day, and the sheep was killed on the tenth day by another experiment.

The wound in the artery was perfectly closed by lymph, without the formation of any coagulum in the vessel, which consequently remained pervious, the cicatrix itself being hardly perceptible. Some coagulum had formed externally along the course of the artery, in the same manner as it had taken place in one of the sheep ,in which M. Halmagrand had made a longitudinal wound and afterwards applied his styptic, killing it however on the fifth day. (See preparation No. 1.)

Experiment II.—The same day M. Halmagrand laid bare the carotid artery of another sheep, so that the external wound might be such as he was accustomed to make. I then divided the artery transversely to exactly half its circumference (a kind of wound which M. Breschet's experiments have proved to be more likely to bleed fatally than a transverse wound of either one-third or two-thirds of the artery). The incision, however, had been made too much in front of the artery, so that M. H. had some difficulty in finding it, and the artery lay to the outside of my fingers instead of being directly below them ; in consequence of which, before I could make any pressure on the vessel against the vertebræ, the animal had lost a pint and a half of blood and fainted. When it revived, a short time afterwards, the

artery again began to bleed freely, so that the syncope had not allowed of coagulation, and the animal would probably have died if nothing further had been done. I then placed on the wound the usual compresses dipped in *Ruspini's styptic*, and held them for ten minutes, using a single ligature in the skin. No hæmorrhage occurred; the compresses were removed at the same time as in the first sheep, and the animal was killed by another experiment on the eighth day.

There was some extravasation in the course of the vessel; the external wound, which was suppurating, communicated directly with the artery, which was completely blocked up by a firm coagulum, united by lymph to the interior of the vessel for about half-an-inch above and below the opening, connected on the side next to the heart with a loose coagulum two inches long. (See preparation No. 2.)

Experiment III.—I exposed the carotid artery of a sheep and cut out a circular portion of the vessel, a kind of wound which Dr. Jones had not tried (probably because it is not one that is likely to occur in practice), and placed over the opening the usual compresses dipped in *plain water only*. The animal was so restless, however, that I could not retain my fingers on the artery with sufficient firmness to prevent some escape of blood several times during its struggles, and after some time I removed the compresses, when as large a stream of blood issued as at first. I then placed some fresh compresses, dipped in water, on the opening in the artery, and retained them for ten minutes, though not without more struggling. The vessel still bled as soon as my pressure was relaxed, and consequently the animal was under the same circumstances, and would probably have died in the same way as another sheep in which M. Halmagrand had made a similar, but somewhat smaller wound, and had afterwards applied his styptic unsuccessfully. I therefore altered my experiment, and united the skin coarsely by a *continued suture*, so as nearly to confine the blood, in the same manner as Dr. Jones had done in his experiments. The integuments were distended with blood as soon as my fingers were removed, and some escaped also between the stitches, which were loosely fastened. The animal got up, however, in a short time without appearing at all faint, and there was no further hæmorrhage; it was killed on the sixth day, when the wound was open and suppurating freely. The interior of the vessel was completely filled with coagulum to a considerable distance above and below the wound, which was blocked up by a portion of the coagulum projecting into the aperture. (See preparation No. 3.)

Experiment IV.—I exposed the right carotid artery of the sheep in which the left carotid had been opened in Experiment 2, and removed a portion

with scissors, and then placed on the wound three compresses of the usual size dipped in *plain water*, and made pressure with the fingers for ten minutes, and then put a single ligature through the skin. The animal lay quiet during the experiment, and not a drop of blood was lost till the next day, when considerable hæmorrhage occurred, and this continued at intervals till the third day when it died from the bleeding.

The wound of the soft parts was so small and direct that no extravasation had taken place into the sheath of the vessel, and no external coagulum had formed, so that the wound of the vessel remained open. Within it a small recent coagulum only had formed, which nearly closed the end of the vessel nearest to the head, but left the lower orifice quite open. (See preparation No. 4.)

Dr. Jones found in his experiments, that a small wound leading directly down to an artery was more dangerous than one in which the soft parts around the vessel were more disturbed, as the formation of an external coagulum is facilitated by this interference with the cellular membrane. The sheep in this experiment was exposed to this source of danger, but it appeared to me, however, to have died not so much from this circumstance, since there was no hæmorrhage for twenty-four hours, as, in all probability, from its having disturbed the compresses in endeavouring to drink out of a high pail, for the water was found to be mixed with a large quantity of blood, while there was comparatively little elsewhere.

Experiment V.—I exposed the left carotid in the sheep which had been the subject of the first experiment, and placed a hook under the vessel. I then sewed up the wound in the skin coarsely by the continued suture, leaving room for the vessel to be drawn to the edge, and removed a portion of the vessel with the scissors to the extent of nearly half its circumference, the hook being withdrawn, so as to allow the vessel to recede, the ligature was tightened so as nearly to prevent the exit of the blood, which came through the wound copiously for a few seconds, but then ceased. No further hæmorrhage occurred till the *third day*, when some recent blood was seen dropping from the wound; this continued at intervals till the fourth day, when the animal died.

The wound was much distended with coagulated blood, and suppuration was commencing; the opening in the artery was undefended by any plug, neither was there any coagulum in the interior of the artery sufficiently large to prevent hæmorrhage from either side. (See preparation No. 5.)

I should observe, that in all probability the last two experiments were performed under unfavourable circumstances, as the opposite carotid arteries had already been operated on, and in Experiment 4 the left carotid having

been entirely obstructed by Experiment 2, only the vertebral arteries remained to convey blood to the head, so that probably the impulse through the right carotid became more powerful than it otherwise would have been; but, on the other hand, this very circumstance, which may have contributed to the unsuccessful result of Experiments 4 and 5, renders the success of Experiments 1 and 2 still more striking.

It appears, then, that in all these varied experiments, the flow of blood was restrained for a time, the shortest period at which secondary hæmorrhage occurred having been twenty or twenty-four hours, and that in three of them the wound in the vessel was adequately closed to have prevented any further hæmorrhage. It appears, also, that out of *four* experiments performed in the same manner as M. Halmagrand's, but without the use of his styptic, *two*, viz., Experiments 1 and 2, were permanently successful, in one of them the artery being left pervious, in the other, being obliterated by coagulum; that a third, Experiment 3, failed at the time of the operation for want of sufficient coagulum in the vessel, to defend it after the compresses were loosened; and further, that Dr. Jones's method saved this animal after simple pressure had not succeeded; and that one only, viz., Experiment 4, was altogether unsuccessful, the animal having in this case only died of the operation.

The conclusions which I think may be legitimately drawn from these experiments, and from what I have seen of M. Halmagrand's (and which are strengthened by the failure of the last two, since the reasons why they failed are plain), are the following:

1st. Experiments 1, 2, and 4, demonstrate that pressure continued for ten minutes upon an injured artery, *in a nearly open wound* of the soft parts, by means of small compresses moistened in various liquids, may check the hæmorrhage from an artery in which a longitudinal or transverse wound has been made, or from which a portion has been removed. They thus prove an additional point to the facts ascertained by Dr. Jones, whose experiments upon partially divided arteries were made in *wounds closed by a continued suture.*

2ndly. Experiments 3 and 5 show that when a portion of an artery has been *altogether removed,* the hæmorrhage may be restrained, and the vessel permanently closed, by allowing the blood to coagulate in the soft parts, as in a diffused aneurism. Dr. Jones had previously proved this point with regard to several other kinds of wounds of arteries, but had not attempted this peculiar modification of injuries of vessels.

3rdly. Experiments 1, 2, and 4, prove that the means by which hæmorrhage is controlled, when pressure is made for a short time in an *open wound,* are the same which Dr. Jones's experiments had shown to be exerted in a *closed wound;* viz., the formation of coagula, either in the lips of the wound

of the vessel, or in the cavity of the artery, or in the cellular membrane around it, or in any two of these situations, or in all of them at once; except in some longitudinal wounds, which may occasionally be closed by the deposition of lymph alone, in which case the vessel may still remain pervious.

4thly. It is shown further, that if coagulation takes place imperfectly, or if the clot is suddenly or violently disturbed, immediate hæmorrhage will occur.

In two of M. Halmagrand's experiments the compresses were probably thrown off thus by the exertions of the sheep, and the coagulum being consequently disturbed, both of them died. In Experiment 3, also, I could not obtain coagulation at all, the animal being so very restless on the table, and probably it would have died, had I not produced coagulation in a different way.

5thly. Experiments 4 and 5 show that although the hæmorrhage may be controlled for a time, it may subsequently return at various periods from the causes pointed out in the last section as capable of producing immediate hæmorrhage. In Experiment 4 bleeding commenced about twenty or twenty-four hours after the injury; in Experiment 5, on the third day, and in one of M. Halmagrand's experiments at the London Hospital, described in the *Medical Gazette*, it did not occur till the fifth day after the wound. Dr. Jones's experiments also lead us to the same conclusion with regard to secondary hæmorrhage from wounded arteries.

6thly. It is probable that styptics applied to a bleeding artery can only be beneficial in two ways: *First*, by causing contraction of the coats of the bleeding artery. It is proved, however, by these experiments, as well as by Dr. Jones's and M. Halmagrand's, that whatever may be their effect upon *small* arteries, styptics scarcely induce any contraction of the coats of a *large* artery, and often none at all; but that, whatever may be the means employed to control the hæmorrhage, the formation of a clot, and the deposition of lymph, are almost always necessary. Surgical experience, moreover, teaches us the same lesson with regard to partially divided arteries, although, no doubt, in cases where an artery is wholly divided, contraction is powerfully exerted to prevent loss of blood.—Or, *Secondly*, styptics may be of service by accelerating or promoting the coagulation of the blood. If, for instance, the decoction of galls, which was employed in the first experiment, be mixed with recent blood, it instantly produces coagulation, and such, I am informed, is also the effect of MM. Talrich and Halmagrand's "Liquide Hæmostatique;" but Ruspini's styptic, which was permanently successful in the second experiment, and which is often employed in practice with marked benefit, produces no coagulation, nor any other sensible effect, on recent blood; neither, of course, does plain water, which was temporarily successful in Experiment 4,

promote coagulation. If, then, pressure for a few minutes upon a wounded artery can permanently prevent hæmorrhage, when that pressure is made with compresses dipped in various fluids, which neither produce contraction of the artery, nor facilitate coagulation, we are justified in concluding that if stypties *are* employed, the cessation of the hæmorrhage is to be ascribed principally, if not entirely, to the pressure, or at all events in a minor degree only to the action of the styptic.

7thly. These experiments further demonstrate that the effects of pressure with or without the use of stypties, are precarious and uncertain, even in brutes, and therefore, *à fortiori*, ought not to be depended on in cases of wounded arteries in man, to the exclusion of the almost uniform success of the ligature, whenever its employment is practicable. And, in fact, every day's experience teaches us, in the most striking manner, the important lesson, which these and all other experiments on the subject corroborate, that wherever there is an external wound communicating directly with a large artery—although first, there may be complete cicatrization of the wound and consequently no further hæmorrhage; or secondly, that a circumscribed false aneurism *may* be formed (this may take place at least in man, though I am not aware that an aneurism has ever been formed in any experiments upon brutes) which is capable of being cured by the common operation of tying the artery at some future time, at a distance from the wound. Yet we cannot feel confident that either of these circumstances will ensue, but, on the contrary, are obliged to entertain constant apprehension lest the barrier afforded by the internal or external coagula should give way, and in the first place, when the wound in the skin HAS united, a diffused aneurism should be formed requiring a ligature above and below the aperture in the vessel, but accompanied with an extensive suppurating wound, which might have been avoided if the vessel had been tied in the first instance; or in the second place, if the skin HAS NOT united, then we cannot but feel constant anxiety lest our patient be destroyed by a sudden gush of blood, or, as more frequently happens, be worn out by irritation and by loss of blood, from the no less fatal influence of frequently repeated smaller hæmorrhage.

8thly. But lastly, while I deprecate most strongly any reliance on the use of stypties in wounds of *large* arteries, I do not deny that they may sometimes be of service as *auxiliaries* in the case of hæmorrhage from *smaller* vessels; and if further experience shall prove that the "Liquide Hæmostatique" of MM. Talrich and Halmagrand is really superior in this respect to other stypties, I shall have as much pleasure in acknowledging the fact as I have in ascribing to their distinguished countryman Paré, the revival of the still greater security against hæmorrhage afforded by the ligature.

P.S.—It may, perhaps, be interesting to those who are not convinced by

my experiments of the small share of eredit that styptics ean claim in eontrolling hæmorrhage from large arteries, to be aequainted with the following summary of Dr. Jones's experiments, in whieh *no styptic* was employed; the knowledge of which induced me to perform my own, although of a different kind to his, with perfect confidenee in their result; a eonfidenee in his aecuracy, and in the powers of nature, whieh was not deceived. Dr. Jones's experiments were performed upon the earotid, axillary, femoral, and humeral arteries of horses, asses, and dogs, and eompletely prove that where the integuments *are closed*, by far the majority of wounds of large arteries will be eurcd by very simple means, my own experiments serving to show the same result with regard to open wounds.

1. Partial wounds, 22; lived, 19; died, 3.
2. Secondary hæmorrhagc oceurred in 5; lived, 2; died, 3.
3. The kinds of wounds were—

		Lived.	*Dicd.*
Longitudinal wounds	2	2	none.
Oblique wounds	3	2	1
Transverse wounds of less than half the circumference	3	3	none.
Half the eircumference eut	4	2	2
Considerable (kind not stated)	1	1	none.
Punetured wounds	9	9	none.
	22	19	3

4. Died of seeondary hæmorrhage, 3: one lived for eighty hours; one lived six days; one lived for twenty-five days.

5. Dr. Jones also eompletely *divided* or *tore through* the same sized arteries, in nineteen experiments; tying the integuments in fifteen, and leaving the wound entirely open in the other four. Of these nineteen, six died, or were killed just before they probably would have died; the remaining thirteen all lived.

Of the six that died, three were open wounds; in three the skin was closed by suture.

In four of the experiments, the end of the artery nearest the heart was tied; of whieh one died, three lived.

In fifteen, nothing was done to the artery; of whieh five died, ten lived.

Half-moon Street, Jan. 23rd, 1832.

[*Med. Chir. Trans.*, v. xvii., p. 71.

CONTAGION OF SMALL POX AFTER DEATH.

To the Editor of the London Medical Gazette.

Sir,—In the early part of the last month the body of a stout middle-aged man was brought to Great Windmill Street for dissection, who appeared to have died of confluent small-pox; the eruption of which covered the whole surface of the body. As some of my pupils expressed fears of the probable consequences of dissecting a subject in this state, it was not taken into the dissecting-room, but remained in an outer room, to which some gentlemen had occasional access, where it was injected with the usual saline solution and some days afterwards it was taken into the dissecting-room for about two hours on two successive days, when I performed some operations upon it, with many of the pupils around me. For about ten days, therefore, it might have been possible for the contagion of small-pox to be exerted; which probably was the case, as, within a short interval of time, four gentlemen have gone through the disease. One of them merely saw the body, without approaching near it, but the object excited a feeling of disgust at the time, so strong that he dreamt of it the following night, and the impression frequently returned to his mind. He immediately sickened, and the eruption made its appearance on the third day after this short exposure. Another gentleman was near the body when I had it in the dissecting-room, but did not actually touch it: in him the eruption did not show itself till a later period. A third had been in the habit of frequenting the small-pox hospital, and even of making drawings of the disease from patients after death, without receiving the poison, as short a time as three months before he actually received the disorder. He was for some time each day in the dissecting-room, though scarcely near this subject in the outer room. The fourth gentleman was with me when I had the subject in the dissecting-room, and touched it with his hands.

Three of these gentlemen had the disorder very mildly. The third had it in rather a severe form, and will probably have a few permanent marks. He had been vaccinated, and has a good cicatrix.

I remember having several times seen bodies covered with small-pox used in the dissecting-rooms, without having heard of the poison having been received by inoculation; still less of the disorder having been communicated through the medium of the atmosphere alone. Yet, as all of these gentlemen underwent the disease within a few days of each other, and had all been in contact with or near this subject, there is little doubt in my mind that they all contracted the disease from the same source: a circumstance which will certainly make me more cautious than I before felt inclined to be, of

admitting small-pox subjects into the dissecting-room ; and as the relation of the fact may make other lecturers also hesitate in exposing their pupils to the disorder, you may perhaps think it worth the insertion in your Journal.

I am not aware that any facts have been noticed as to the time that the contagion may remain after the death of an individual from this cause, though it was well known that it remained active for some little time afterwards. This person had certainly not been dead many days when he was brought to Windmill Street; yet he had probably been dead fourteen or sixteen days when two of the gentlemen first came near the body.

Perhaps, too, the extent of surface affected with the disorder may influence the probability of infection. Most of the instances I remember of persons brought into the dissecting-room with the disorder, have been young persons, or children. This, on the contrary, was a very large stout adult, in whom there was necessarily a more extensive surface, from which the poison may have been diffused through the atmosphere, than in younger persons. Probably, too, the confluent nature of the disease may render the poison more active, and I observed, when the body was first brought in, that the peculiar smell emitted in small-pox was present in a great degree.

I am, Sir,

Your obedient servant,

Cæsar Hawkins.

31, Half-Moon Street, Jan. 19, 1829.

[*Medical Gazette*, vol. iii., p. 282.

AN ACCOUNT OF SOME EXPERIMENTS

RELATIVE TO THE

PREVENTION OR CURE OF HYDROPHOBIA,

AND THE

BITES OF SERPENTS.

READ AT THE ROYAL COLLEGE OF PHYSICIANS,

June 14*th*, 1830.

In consequence of the interest invariably excited by the promise of protection against the two deadly poisons which form the subject of this paper, I have thought that even an imperfect investigation of the value of some proposed remedies would not be undeserving of the notice of the College, by whom

the public were first made acquainted with one of these new medicines. I have therefore ventured to offer the following account of some experiments, some of which I was enabled to make through the kindness of Mr. Youatt, a distinguished veterinary teacher, whose zeal in such investigations has been the cause of his having been four times bitten by rabid dogs.

It is well known that dogs are affected with two kinds of rabies, in one of which they are exceedingly furious and dangerous, while in the other they manifest no disposition to injure those around them, beyond an occasional snap, which may easily be guarded against; and it seems to me to be not improbable that there is a corresponding difference in man also, and that in both it arises in great measure from the previous habits and disposition; so that I have seen a quiet and amiable boy lie for hours in the last stage of the disease, smiling and apparently engaged in a pleasing kind of delirium, while the boy whose case I have presently to allude to was furious and unmanageable, and actually drove all the attendants in terror from the room, till he dropt on the floor insensible and exhausted by his own efforts. The one was well educated and amiable, the other afforded a striking moral lesson, as the very bite which caused his horrid death appeared to have been occasioned by his cruel and depraved habits.

Any experiments upon dogs should be conducted in that form which is called the dumb madness, which will be as satisfactory as in the other, for the identity of the two forms of disease is proved by either of them arising indifferently from inoculation in dogs, and by the fact that they equally impart hydrophobia to man; and I cannot refrain from observing, as a caution to those who attend upon a hydrophobic patient, that popular prejudice appears to be more correct than medical scepticism as to the power of human saliva in reproducing hydrophobia in man, or rabies in dogs, since although many others have failed in the experiment, Magendie and Breschet succeeded in exciting rabies in a dog by inoculation from a patient of Dupuytren.

The subject of my first experiment was a spaniel, which had been bitten three weeks previously, and had begun to show symptoms of illness three days before I saw it, at which time the symptoms had considerably advanced. I gave it three doses, each consisting of a table spoonful of the juice of the Mikania Guaco, on that day, and repeated it four times on the following day, during which time a gradual improvement took place, *i.e.*, during 36 hours. The circumstances observed were these:

The bark which is peculiar to rabid dogs was not heard after the first dose. The excessive irritability and restlessness under which the dog laboured were completely subdued, it seemed lively and natural in its movements, and the eyes resumed much of their natural appearance and expression. The respiration which had been hurried, and attended with a peculiar grating noise,

became quiet and easy. Tormented with excessive thirst the dog had been constantly endeavouring to lap water, but as he was unable to swallow it, the water only became covered with viscid saliva; this thirst appeared to be diminished, the salivation ceased, and it could again drink with comparative facility. The jaw which had been dependent from paralysis, was again capable of being closed, and instead of the tongue hanging out of the mouth, and being almost of a purple colour, it could again be moved freely. Having before been deprived of appetite and of the power of swallowing, the dog acquired an inclination for food, and in the morning could swallow it, if it was placed far back in the mouth, and in the evening it made a full meal by its own efforts.

But this change was delusive. On the following morning all the symptoms had returned with full force, and it seemed useless to waste the small quantity of the medicine which I possessed; and the dog died two days afterwards, completely exhausted, with sloughing of the eye, and gradually increasing paralysis of the whole body.

As far then as a single experiment can be relied upon, and that too not commenced till the third day of the disease, a favourable report must certainly be given of the Guaco as a *palliative* in *rabies canina*. Several other medicines, the *Alisma Plantago*, or water plantain, the knowledge of which was bought by the Russian government at a high price, the scutellaria, or scullcap, recommended by Dr. Spalding, in America, as infallible in this disease, and especially Belladona, will also mitigate the symptoms of rabies, but from neither of them had Mr. Youatt ever witnessed so decided, and so long continued an amendment, as from this new medicine.

Soon after this experiment a case of hydrophobia was admitted into St. Thomas's Hospital, under the care of Dr. Roots, in which several ounces of the juice of the Guaco were given at short intervals, by injection and by the mouth, and some moistened leaves were placed on the chest, after the cuticle had been detached by boiling water, and a considerable quantity of an extract of Guaco was administered, which had been sent from Trinidad by Sir Ralph Woodford, to Mr. Harrison of the Treasury, two years ago, and had been given by him to Dr. Ferguson. I observed the effects of the medicine during several hours, during the time it was supposed to have most influence, which was that of calming the boy, and diminishing the frequency of the paroxysms, though perhaps this may in part be attributed to a large belladonna plaster, and in part also to the greater stillness in which the room was kept, as I did not leave him at this time till near four in the morning. Yet it was observed that even during the time of the greatest calmness, a glass of water brought into the room for one of those who watched him, was sufficient to rouse him instantly into one of those paroxysms of horrid suffocating spasms which characterize the disease in man. Certainly the relief which

could fairly be attributed to the Guaco was much less than I saw in another case from the employment of prussic acid in large doses, at short intervals.

In estimating the effects of medicine in hydrophobia, two circumstances are not usually taken into account by those who witness the disease. The first is, that during part of the last twelve or eighteen hours, there is often a remission of the spasms for a considerable time, independent of any medicinal effect, previous to that nausea and vomiting which generally precede death. This was the case in the present instance, for at the time when the boy was most violent, and the Guaco had least effect, he eat and drank voraciously, notwithstanding the constant nausea under which he laboured. The other circumstance is this. The unfortunate patient is tormented during part of the disorder by the viscid saliva, which chokes him, and gives occasion to the spasms. The dog is constantly endeavouring to get rid of it with his paws, and the human patient will start in an instant from apparent sleep, and spit it around him, or cram the clothes into his mouth to wipe it away. For the same reason, notwithstanding the awful preparation which is necessary, and the violent and convulsive spasms which attend deglutition, yet the patient will voluntary submit to this for the sake of the temporary relief which follows the attempt to wash his mouth or swallow some fluid. He will muster all his resolution, and hold the cup in his extended arm for several minutes, half choked with spasm, and at last, with a sudden effort, he will dash it to his mouth, with such violence as almost to break the vessel or his teeth, and fill his mouth with the liquid, while his whole frame is in the utmost excitement; he then sinks exhausted, but calm, upon his pillow, frequently appearing as if under the influence of a powerful narcotic, while in reality the repose he enjoys may be produced by any cooling fluid. Taking these facts into account, the relief this patient experienced from the Guaco was much less than I was led to expect from its influence upon the rabid dog.

Thus then as a *cure* for hydrophobia this medicine has failed in these two instances, and like every other remedy hitherto proposed, can probably only be ranked as a *palliative*, not in the least retarding the time of dissolution; but as a *palliative* it was possessed of so much power in the dog, that I am very anxious to learn its effect, if some more could be obtained, at an earlier stage of the disorder, for doubtless it is only at the commencement of the disease that a cure can ever be expected, and probably it will always be too late to subdue hydrophobia after those spasms, which characterize the disease in man, have once commenced.

I would venture, therefore, to suggest that for the future the most minute attention should be directed to the first invasion of the constitutional effects of the poison. The symptoms have often been accurately described which

occur *after* the diffieulty of breathing and swallowing have commeneed, *i.e.*, during the last thirty or forty hours of the patient's existenee; while little is known of the preeursory symptoms, exeept that there is some undefined general indisposition, and eommonly some pain in the bitten part, and in the limb in which the injured part is situated, for three or four days before hydrophobia aetually eommences. It is not improbable that if more were known of this important ehange in the system, when the dormant poison begins to take effect, and if the symptoms were more aeeurately eompared with those whieh take plaee in dogs and other animals, some elue might be obtained towards the eure of this frightful and perhaps inereasing malady.

Every remedy whieh has hitherto been known to mitigate the symptoms of hydrophobia in man, or of rabies in dogs, even the injection of warm water into the veins, appears to aet as a sedative; and this appears to me to be the effect of the Guaeo also, in every animal to whieh I have given it. In young rabbits it seemed to produee an immediate and powerful effeet, like that of prussic acid, so that they lay motionless and paralytie, and apparently dying, for several seeonds, but then reeovered so as to walk or run. In larger rabbits the influence of the medicine was not immediately so great, but lasted for a longer time, during whieh they seemed weak and feeble, and unable to take their food. Two rabbits appeared to die from the effeets of the Guaeo in less than twenty-four hours, and another in about forty hours, the latter having aeute inflammation in the lungs. But it is evidently a weak nareotic when given to larger animals; since the boy whose ease I have related took a very large quantity, and the dog beeame more lively in eonsequenee of the relief which was eaused by the medieine; and in neither of them was there any tendeney to sleep produced.

In the travels of Lieutenant Hardy in Mexico, whieh have reeently been published, another plant of the nareotie class has been extolled as an infallible eure for hydrophobia, namely, an Ameriean speeies of hellebore,—the *Veratrum Sebadilla*. But I have had an opportunity of trying this plant also in a ease of eanine madness, through the kindness of Dr. Roots, and I regret to announee that it has failed to justify the lavish eneomiums whieh have been bestowed upon it. I have given to a rabid dog four times the dose whieh is said to eure hpdrophobia in man, without any sensible effeet; or, at the utmost, a very slight mitigation of the symptoms, less than that whieh is afforded by belladonna, and far inferior to the very deeided influenee produced upon the disease by the Guaeo. And this failure is the more remarkable, as the medicine seemed to be quite fresh, and the eommon hellebore is a powerful poison to dogs, even when used in small quantity as an external applieation.

Another virtue which has been ascribed to the Guaeo, is that of preventing

the occurrence of hydrophobia in those who have been bitten by a rabid animal. I am unwilling to deny altogether the power of preventing hydrophobia by internal means; since it is possible that a state of the constitution may be excited by them, analagous to that which is observed *naturally* in some persons who may be repeatedly exposed with impunity to other animal poisons, such as small-pox or measles; or like that which is produced *artificially* when one animal poison is employed successfully to enable the system to resist the action of another; or in the third place, similar to that change in the constitution which indisposes a person to be acted upon by the same poison more than once. But it is much more probable that the boasted efficacy of the Guaco will not rank higher than that of many other preventives, not one of which can as yet be relied upon, since all have failed, and one of the most celebrated of which, in our own country, contains or formerly contained, nothing more powerful than a little chalk. At all events, the uncertainty of the occurrence in hydrophobia in man, when compared with its frequency in dogs, after inoculation, is fortunately for mankind so great, that very numerous experiments must be made before the surgeon can be justified in not having recourse to excision and the caustic as the best means which analogy would suggest as likely to prevent the disorder, and the efficiency of which has been confirmed by experience to an extent which ought to diminish materially the periodical alarm which is felt throughout the country with respect to hydrophobia. One half, perhaps, at least, of those bitten by dogs, receive no inoculation of poison, and of the number of those injured by decidedly rabid animals, few indeed become infected if the measures just mentioned can be adopted within a reasonable time after the wound has been inflicted. Mr. Youatt informs me that he has kept a record of four hundred persons, who have had recourse to his assistance, after having been bitten by really rabid animals, and although one died of fright, not one had hydrophobia; a number which, if confirmed by other documents, leaves little ground for apprehension to any one who has applied for surgical assistance.

It is probable, however, that much more might be done in preventing the occurrence of the disease in dogs, from which animal it is most frequently communicated to man, if the public were better acquainted with the early symptoms of the disease. To show how vague and erroneous are the notions usually entertained of the nature of rabies in dogs, I need only instance two examples. Every newspaper speaks of the application of a supposed test, in a suspected dog, and if the animal attempts to lap water, he is allowed to go at large without apprehension, while in fact the only comfort of a rabid dog is to have plenty of water, in which he may, ineffectually indeed, attempt to assuage his thirst. And again, every poor hunted animal which tries to defend itself against its murderous pursuers is directly set down as raging

mad, and persons have actually died of the fright caused by their having been injured by a harmless creature; while the placid quiet spaniel, or house-dog, is allowed to lick its master's fingers, or snarl and bite its companions, without a consciousness of the hidden danger, because, forsooth, it does not rush furiously at everything within its reach. There can be little doubt, however, that rabies never originates spontaneously even in dogs, but arises only from inoculation with saliva, so that it has been successfully prevented from obtaining an entrance into a kennel by making every fresh dog perform quarantine for a definite period. If then every dog which had been bitten by another were carefully secluded for four months, which exceeds the common period at which the disease commences after the infliction of the injury, and if each dog which shows the least sign of indisposition, were prevented from communicating the disease, should it prove to be labouring under it, much might be done towards the diminution of this alarming malady. And still more, perhaps, if the law were enforced with greater severity against those who keep these animals only for illegal and brutal purposes, for it is asserted by Mr. Youatt, that in nineteen cases out of twenty, the disease is propagated by the fighting dogs in town, and by the cur and lurcher in the country.

With reference to the second subject which I proposed for investigation, I hoped to have been able to communicate some more complete information than I have yet obtained, upon the effects of Guaco as a preventive or a cure for the bites of poisonous serpents; but if six thousand experiments, made with three thousand vipers, still left Fontana in doubt as to some points connected with this poison, it is not surprising that I have not obtained a perfectly satisfactory result with the small quantity of the medicine which had been sent to the College of Physicians, and with which I had been entrusted by the kindness of the President.

I imagined, indeed, at one time, that two rabbits had died after being poisoned by vipers, although they had previously taken the Guaco; but I found that the principal fangs had been removed, and although it was possible that some of the subsidiary fangs might have inflicted a wound, yet subsequent observation has satisfied me that they died not from the poison of the vipers, but from the effects of its supposed antidote, and I have not since been able to procure any vipers to ascertain what the effects of the Guaco may be as a cure. I have, indeed, inoculated rabbits by means of the glands which secrete the poison, but no effect was produced by the operation. As a means, however, of preventing serpents from biting, the Guaco seems utterly useless. It is supposed by Humboldt, who describes the Mikania Guaco (in his magnificent work, "Sur les Plantes Equinoctiales") that the medicine may produce this effect by the dislike the serpents have to the nauseous smell of the plant, and that rubbing the hands with the leaves

would be as effectual a preservative as taking the juice internally. A large poisonous serpent, however, from Bengal (which is not described by Russell in his history of Indian serpents), instantly killed two birds, one of which I smeared over with the juice, and gave some of it internally to the other; yet the serpent laid its head upon them for some time without regarding the smell. It did not indeed swallow them, but it was at other times very capricious if at all looked at or disturbed in its meals. I could not afterwards make it poison a rabbit, though it struck it with its head, but it equally refused to bite one which had not taken the Guaco. The vipers also tried to bite rabbits to which the Guaco had been given; so that since neither of these poisonous snakes, the only kinds which I have yet procured, were at all deterred from biting, and even killing animals which had taken the Guaco, I should certainly not feel the boasted confidence of the South American or West Indian, in handling serpents which had not previously been rendered harmless by the extraction of their fangs, or by the excision of the glands which secrete the poison.

As, however, the Guaco appears to fail as a preventive, it is probable that its curative agency has also been exaggerated; and I suspect that the view is correct which was entertained of these supposed vegetable antidotes, nearly a centuary ago, by Catesby, who states in his beautiful and splendid History of South Carolina: "Having," says he, "by travelling much with Indians had frequent opportunities of seeing the direful effects of the bites of these snakes, it always seemed, and was apparent to me, that the usual effect ascribed to these, their remedies, is owing more to the force of nature, or the slightness of the bite of a small snake, in a muscular part. The person thus bit I have known to survive many hours without any assistance; but where a rattlesnake, with full force, penetrates with his deadly fangs and pricks a vein or artery, inevitable death ensues; and that I have often seen in less than two minutes. The Indians know their destiny the moment they are bit, and when they perceive it mortal apply no remedy, concluding all efforts in vain. If the bite happeneth in a fleshy part, they immediately cut it out to prevent the current of the poison."

With this sensible view of the question we ought certainly to treat the bites of these reptiles on the same principles, though not quite in the same manner, that the hunters of Montpellier adopt when their dogs are bitten by the vipers of that country. They fill some incisions in the wound with gunpowder and then set fire to it. We ought to employ the cupping glass and ligature till incisions are made which may evacuate some of the poison with the infected blood, and caustic applied less rudely than with gunpowder, which may afford the best chance of neutralizing what remains, before the opportunity is given for the absorption of the poison.

ON THE USE OF GUACO

FOR

SERPENT BITES AND HYDROPHOBIA.

To the Editor of the London Medical Gazette.

SIR,—In the Medical Gazette, vol. vi., p. 507, there is a short notice of a paper which was read at the College of Physicians, containing an account of some experiments which I had been enabled to make, through the kindness of the President, with the Mikania Guaco, a plant which is said by the inhabitants of South America, and some of the West India islands, to prevent or cure the bites of poisonous serpents and rabid dogs. The quantity which I possessed was not sufficient to investigate the subject completely, but I ascertained that it did not *prevent* poisonous serpents from biting animals which were under the influence of the reputed preservative, nor did it seem to do more than mitigate the symptoms of rabies or hydrophobia; it did not seem to retard the fatal result either in man or the dog. Still, however, the belief in the efficacy of the medicine is so strong—it is so widely diffused—and has continued so long, that although I am inclined to think the accounts we have received are much exaggerated, it is well deserving of further trial, as even palliation of the frightful symptoms of hydrophobia is yet a desideratum. On this account I avail myself of your journal to inform the members of our profession that I am in possession of some more of the plant, which has been sent to me by Sir Robert Ker Porter, from the Caracas, some of which I shall be happy to give to any medical man in London, or its neighbourhood, who meets with a case of hydrophobia, in order that its virtues may be again put to the test.

It might appear superfluous, perhaps, to allude to the necessity of accurately distinguishing hydrophobia from other diseases; and yet it is singular to what an extent the apprehensions of the public have been erroneously led with regard to the prevalence of this disease. During the last year, rabies was particularly prevalent among dogs, and the newspapers were constantly full of accounts of mad dogs and cases of hydrophobia; and yet when a return was ordered by the House of Commons of the number of cases which had occurred in the preceding year in all the metropolitan hospitals, it appeared that the instance which I alluded to in my paper, in which the Guaco had been tried, was the only one which had been admitted into them. One case which had been detailed most circumstantially and frequently by the daily press, was that of a poor man, who had died, as I learned from the

physician who attended him, of delirium tremens from drunkenness; nor were these mistakes made only by the public, but unfortunately some medical men have themselves contributed to encourage the popular fears by their ignorance of the disease. One gentleman, for instance, in giving his evidence at a coroner's inquest, expressed his opinion that the patient had died of hydrophobia, and the verdict was recorded upon this evidence, the patient having in reality died a *few days* after the receipt of the injury, no doubt (if the report of the evidence was correct) from the irritation of a lacerated wound.

It is not, therefore, so much the frequency of hydrophobia as the extraordinary, and uniformly fatal nature of the complaint, which induces me to request you to give effect to Sir R. K. Porter's humane exertions, by giving publicity to this letter, in order that the medicine may be employed whenever an opportunity occurs.

I am, SIR,

Your obedient servant,

CÆSAR HAWKINS.

31. Half-Moon Street,
Jan. 26th, 1831.

[*Med. Gazette*, Vol. vii., p. 594.

NOTE ON HYDROPHOBIA

AND THE GUACO.

To the Editor of the London Medical Gazette.

SIR,—I availed myself of the opportunity afforded by the Gazette of informing the medical profession that Sir Robert Ker Porter had entrusted some of the Guaco to my care—a South American plant, which had been vaunted as a preventive against, and a cure for hydrophobia, and that any gentleman might obtain some of the medicine by applying to me, in order that its effects might be tried. The annexed history of a case of this disease, which has been drawn up by Mr. Gosna, is the first which has since occurred.

In vol. vi., p. 507, of the Gazette, is a short notice of a paper which was read at the College of Physicians upon this subject, in which I gave an account of some experiments I had made with the Guaco in two cases of rabies in dogs, and of its exhibition in one case of Hydrophobia in the human subject; the result of which was such as to make me very desirous of

again trying it, as it appeared to exert a powerful influence upon the disease in the dog, notwithstanding the probable diminution of the efficacy of the medicine by its having been some time in this country.

Since that time I have made trial of the medicine in several other diseases, in which it has also been said to do good. In some of these I have given the expressed juice, (mixed with a small quantity of spirit, to enable it to bear the long voyage), and in others a strong decoction of the dried leaves, and in some cases, again, the two forms have been united, and I have also employed the medicine as an external application; but I regret to say, that in none of these cases did I myself witness the least amendment from the medicine; and the only instances in which it has done any good, were two cases of chronic rheumatism, under my brother, Dr. F. Hawkins's care, at the Middlesex Hospital, in which the patients thought themselves more relieved by this medicine than they had been by other plans of treatment. In other cases of rheumatism, however, it entirely failed in procuring any relief; and as it was tried in many different diseases, without the least service, it seems to me unnecessary to enter into details of the cases themselves. The decoction alone seemed to produce no perceptible effect; but the juice, in doses of half an ounce three times a day, or the decoction, combined with three or four drachms of the juice, produced effects in almost all persons which required the cessation of the medicine. These effects were not altogether those of a narcotic, which I was led from former experiment to believe was the principal medicinal virtue of the plant; but the patients after a few days began to complain of violent headache, sickness, restlessness, and disturbance of the nervous system, with acceleration of the pulse—precisely such symptoms, in short, as are frequently produced in persons with whom opium disagrees; and these always subsided as soon as the Guaco was discontinued.

This being the case, I became still more sceptical of the efficiency of the Guaco as a cure for hydrophobia, and was not surprised at the result of the present case, which was very favourable for the trial, as the precursory symptoms were very short and the disease was recognized at an early period, and there was no difficulty in persuading the poor boy to swallow the medicine through the whole course of the disease; and as no other medicine was given (for the single purgative need scarcely be taken into account), there was nothing to obscure our judgment of the real effects of the medicine, which is the case in many published narratives, on account of the various remedies employed at the same time.

It will be seen, however, from the history, that not the smallest alleviation of the symptoms was the result of the employment of the medicine; but that, on the contrary, the progress of the disease was uninterrupted, and its termination even more rapid than is often the case. I do not attribute the

slight calm which took place for a few hours to the Guaco, as, in every case I have seen, the patient became more tranquil, and even slept for a considerable time in one or two cases, in consequence, no doubt, of the silence and quiet of the room during the darkness of the night, and the absence of all excitement from numerous visitors, the glare of light, the wind produced by opening and shutting the doors, and numerous circumstances of this kind, which invariably occasion a paroxysm of the disease.

It will be seen that a very large quantity of the medicine was exhibited—no less than forty-one and a half ounces by the mouth, besides several enemata, in less than twenty-four hours; and yet there was not one change that I think can fairly be said to have been produced by it; which is the more remarkable, as the small dose previously mentioned was attended with perceptibly bad effects in many persons when given for other diseases. At first, indeed, the pulse diminished in frequency, but it requires further trials to satisfy me that this did not arise from other causes, since the usual effect of the Guaco is to accelerate the circulation. The bowels were several times opened during the course of the disease, in consequence of the injections, which is not usually the case in hydrophobia; but no benefit resulted from this circumstance.

On the whole, it appears to me that although the medicine deserves trial in another case, since we know of no remedy for the disease, yet the chance of its doing good is very small indeed. It is possible, indeed, that the juice may have lost some of its qualities, or acquired new ones by fermentations, as Sir Robert Porter has conjectured, and that an extract—in which form it was partly exhibited last year—may preserve more of the properties of the plant. Sir Robert has promised to send some of the Guaco in this form, which may perhaps arrive from the Caraccas before another case of hydrophobia occurs in London, or its neighbourhood; in the meantime, I have still some more of the expressed juice and leaves at the service of the profession in this disease.

I am, Sir,

Your obedient servant,

Cæsar Hawkins.

31, Half-Moon Street,
May 7th, 1831.

Case of Hydrophobia, by Mr. Gosna.

Charles Smith, æt. 15, a boy of slight form and delicate habit, was admitted into the workhouse of St. Martin-in-the-Fields, on the 23rd of April, labouring under symptoms of hydrophobia. He stated that on the 27th February last he was crossing the road in Hart-Street, Covent-Garden,

at the time a number of persons were in pursuit of a Newfoundland dog, supposed to be in a rabid state. He attempted to stop the dog by catching at the collar, when the animal seized him by the wrist, and retained its hold until a bystander forced a pitchfork into its eye. The boy was immediately taken to the Middlesex Hospital, where the wounded parts were excised. He remained in perfect health until the 22nd of April, at 3 P.M. when he was seized with cephalalgia, nausea, and dyspnœa, which gradually increased. In the night he became thirsty and uncomfortable, and called to a person, who slept in the room, for some water; on receiving the vessel which contained it, he felt a sudden and inexplicable repugnance, and with much difficulty swallowed a small quantity.

April 23rd.—At the time of his admission three wounds were still visible on the wrist of the right hand, presenting an inflamed character, one being still in rather a suppurative condition. He complained of a slight pain and a tingling sensation in the part, and was affected with the following symptoms:—Dyspnœa of a peculiar spasmodic character; pupils of the eyes dilated; tongue white; countenance intelligent, and expressive of anxiety; pulse 120, and small:—he was offered a glass of water without previous notice, which instantly produced violent agitation of the whole frame, and deep and convulsive inspiration.

Previous to his being subjected to any plan of treatment, he was taken to Mr. Brodie, who advised a trial of the Mikania Guaco. Accordingly, an application was made to Mr. Cæsar Hawkins, who kindly afforded his assistance on the occasion, and an ample supply of the expressed juice of the plant recently received from Sir R. Ker Porter from South America.

At 2 P.M. a table-spoonful was administered, and ordered to be repeated every hour. The moment he saw the medicine, the muscles of deglutition and of inspiration became convulsed; he turned aside his head, snatched the glass, held it for several seconds out of sight; then, with a desperate effort, swallowed its contents; after which he became tranquil, until some fresh cause of excitement renewed the paroxysm. He ate oranges and jelly without much difficulty.

3 P.M.—Two pills of calomel and colocynth were taken in addition to the Guaco.

4 P.M.—An enema of 4 oz. of a strong decoction of the leaves was administered, and repeated every hour.

6 P.M.—Bowels copiously relieved; pulse 70; frequent sighing. At this period a new symptom appeared, for, whenever the door of the room was opened, admitting a current of air, he became much distressed, and anxiously desired it to be closed.

Had a boiled egg, and bread and butter, which he ate with good appetite, and with little difficulty.

8 P.M.—Paroxysms gradually increasing in violence; pulse 96; a table-spoonful of the medicine to be repeated every quarter of an hour. The enema to be discontinued.

11 P.M.—Pulse 110; profuse perspiration; complains of a fullness and of a suffocating sensation in the throat, and a tenderness on pressure of the epigastrium. He knows, with remarkable exactitude, the time for taking his medicine, and watches with intense anxiety the man whose duty it is to give it him.

24th, 1 A.M.—Has slept half an hour, and appears relieved.

2 A.M.—Pulse 90; takes his medicine with less difficulty; vomited slightly.

6 A.M.—From 2 to this period he has been comparatively easy, pulse varying from 84 to 105; between 6 and 9 the paroxysms became again violent; more anxiety of countenance; pulse small, and fluctuating from 72 to 120. With these attacks he had frequent eructations of wind, from which he experienced much relief; complains of being hot, but the skin feels cold and moist. In attempting to wipe his face with a handkerchief, he could only accomplish it by convulsive efforts, and then threw it from him in great agitation.

12 M.—Has been slightly delirious. At this period he was visited by his mother: he appeared rejoiced to see her; shook hands, and suddenly thrust her from him, crying out, "Run, mother, run, or I shall bite you;" although he had never shown the least disposition to injure or bite any person.

1 P.M.—Frequent expectoration of frothy mucus, its presence in the mouth causing a similar paroxysm to that produced by taking a fluid. Ate some roast beef with voracious appetite.

3 P.M.—Pulse 140; pupils dilated to their utmost extent; the mere breath from his nostrils, on passing over his chest, occasioned sickness and spasm.

At half-past 4 a decided change for the worse took place; he became delirious, and vomited a thin greenish fluid; called violently for tea, which he swallowed with a powerful effort, spilling a good deal over his chest, without experiencing the same inconvenience he had before felt, and also expressed much desire for the window to be opened, lest he should be suffocated.

About 7 he lost all control over his mind; talked incessantly; frequent convulsive twitchings of the limbs; rapid and indistinct pulse; cold sweats; and laborious respiration; which continued until 9 o'clock, when he expired, 54 hours from the commencement of the constitutional symptoms of the disease. The quantity of the expressed juice taken was 41½ ounces, besides several injections.

Sectio Cadaveris.—Vessels of the neck distended; salivary glands enlarged; par vagum natural; fauces deeply reddened, as far as the cuticular lining of the œsophagus, where the redness suddenly ceased; trachea and bronchi slightly vascular.

Vessels of the lungs engorged with blood; the cells contained a small quantity of serum.

The blood found in the heart fluid.

The mucous membrane of the stomach highly vascular, beneath which were numerous spots of ecchymosis; the glands towards the pyloric orifice enlarged. The glandulæ circumvallatæ of the tongue much enlarged, but the salivary ducts on the side of the frænum not distended.

The brain throughout presented a uniform appearance of increased vascularity; so did the membranes; and under the arachnoid, which was slightly opaque, serum was deposited.

In the spinal canal was also found about an ounce of clear fluid, without any other marks of disease.

[*Med. Gazette*, vol. viii., p. 237.

ON HYDROPHOBIA.

The substance of a Clinical Lecture given at St. George's Hospital, June 28, 1844.

I propose in to-day's lecture to bring under your notice the remarkable and rare disease, Hydrophobia, a case of which you have recently seen; not, indeed, under the idea that it may prove of great practical importance, for as none of you, I believe, have ever seen the disease before, so it may happen that you may never see it again. It is now just twenty years since a case of hydrophobia was admitted into this hospital; and there have been only two cases since I first knew the hospital, twenty-five years ago, one of which occurred in the year 1823, when I was house-surgeon, under the care of Sir Benjamin Brodie; and the other under Mr. Jeffreys, I think in the following year, 1824. But although rare, it is right that you should be acquainted with the subject; and I will therefore make some remarks while the case is vividly impressed on your recollection. Certain I am, that having seen this case, you will never fail to recognize the disease, if you should again witness it, and that you are not likely to mistake any other malady for it, although there is no doubt that many of the cases related in medical works have been thus mistaken, several of the supposed cases of the disease

having in reality been instances of some other spasmodic disorder, of which dysphagia formed a part. I will first read you the entire history of the case from the note-book, as far as the facts have been ascertained relating to it.

Charles Havens, 13 years of age, was admitted into the hospital in the evening of June 11th; and it appears that on April 22nd, just fifty days previously, he had been bitten by a dog on the right hand. The wound was small, and healed in three days; and there has been no fresh inflammation since that time; neither has he had any pain running from it to the trunk, nor is there any redness or soreness of the part. At the carpal extremity of the right thumb there is a small elevated cicatrix, with a scratch on each side of it. He complains of pain in the shoulder, from a fall three days previously to his admission. He remained well till this morning the 11th, when he complained of feeling ill, and as his mother was washing him, he allowed her to wash his hands; but when the water was about to be applied to his face, he ran away with dread, and frequently placed his hand to his mouth, saying he was going to be choked. He was taken to a surgeon, who gave him an emetic. All this was not known when he was brought to the hospital at 9 P.M., at which time he is said to have had a furred tongue, a hot skin, and quick pulse, and some redness of the fauces, with slight difficulty of swallowing. Some calomel was given to him, and some senna ordered; but as he had two motions after the calomel, the senna was not given.

The next morning, the 12th, the notes say he had no sleep during the night; and this morning he is much distressed, and his countenance expressive of great anxiety at any surprise, or noise, or on any one approaching him; the least breath of air, the noise of water, and especially the sight of it, or the idea of swallowing, brings on a violent spasm of the muscles of the throat, particularly of those connected with the function of deglutition; and he complains of great pain in the throat when he attempts to swallow, which is done convulsively and with effort. It was while things were in this state that I was sent for, and I saw him for the first time between 9 and 10 o'clock.

About 10 A.M., after much coaxing, he swallowed a pill with one grain of Cannabis Indica, said to be quite fresh; and at 11 A. M., an hour afterwards, another grain was administered. Some ice was also given him, but he could not put it to his mouth; "it took his breath away." The motion of the bed-clothes brings on spasm, and he holds his hand violently to his mouth whenever the door is opened, or there is the least current of air; he complains angrily also if any one brings his hand near him, whether towards the face, or even any part of the bed. The spasms of the throat are more frequent. His intellect is unimpaired. The pulse is about 90, intermitting irregularly, about four times in a minute—I should observe, however, that this was noticed earlier in the morning, before any medicine was given him. The fever of the night before was now nearly gone, and the redness of the fauces was no longer

perceptible in the degree previously observed. At 12 o'clock, being in the same state, with apparently no effect from the pills, three drops of Scheele's Prussic acid were given, and the same quantity half an hour afterwards. At 2 P. M. you all saw him with me, and might have observed the symptoms before mentioned. The notes continue :—No apparent effect from the medicine ; perspiration breaking out ; spasms of the throat as frequent as ever ; terror as great. A little beef-tea was offered him, and after much persuasion he took it up (insisting on a smaller quantity being given), threw it into his mouth, and instantly gulped it down ; this was followed by spasm and great distress. There is now some wandering and confusion of thought, and he fancies he sees things and persons on the walls and around him. Two grains more of the hemp were administered, and the same dose was repeated at 3 and at 4 P. M., at which time the notes say there is more wandering ; spasms of the throat not so violent ; some perspiration. A beef-tea injection was about this time attempted to be thrown into the bowel, but he resisted so violently that it had to be given up ; and the horror produced by the attempt remained for a long time afterwards. I saw him about 5½ P. M., still exceedingly alarmed at the idea, fighting furiously with his hands and whole body, and confusing in a singular manner the supposed shooting of the syringe with imaginary shooting in a shooting-gallery. Two grains more of the Cannabis were given at 5½ P. M. : and as the house-surgeon, Mr. Cundy, seemed anxious to apply a cloth dipped in laudanum and æther, which he had been informed had recently been done in two cases successively of tetanus, with presumed good effect, as both patients recovered, I gave him leave to use it ; but the application had the effect of making the patient worse for a time. At 7½ P. M. there was less spasm, but foaming at the mouth was now noticed, and violent mania, and he refused to take his pill ; three drops of hydrocyanic acid were therefore given in its stead. He took a two-grain pill, however, at 8, and at 9, and again at 10½ P. M., at which time he was much freer from spasm, and had sucked an orange and taken a little beef-tea ; but he wandered and talked incessantly. At 12 P. M. he took three grains of the hemp, and the same quantity at 1 A. M. At 2 A. M. he took two grains, and the same at 5, 7, and 8 o'clock. At 8 A. M. of the 13th, the notes say :—between 1 and 2 o'clock he had several fits of spasm of the throat, and two of these fits were accompanied by opisthotonos, each lasting about a quarter of an hour, with twenty minutes interval between them ; since which time he has been more quiet and collected, and free from spasm and alarm, and continued so till 7 o'clock. During this time he took three eggs, with some bread and butter, and a little beef-tea, without apparent difficulty ; he also talked sensibly, and once he appeared to sleep for a few minutes. The pulse is however weaker, his expression is more careworn, and he has some retching. At 9 A. M. he took three grains more of the hemp, and again at 10 the same quantity, at

which time he was more violent, and refused to take anything else; he talks incessantly; the pulse is weaker, and the extremities are becoming cold; the eyes are hollow and staring; the expression of the countenance is horrible. He is now perfectly delirious, talking, singing, and shouting; he is vomiting constantly black matter, which he brings up with hiccough; there is heaving of the chest, but not much difficulty of breathing. At 1 P. M. he is furiously delirious, but evidently weaker; pupils dilated; eyes wild and prominent; mouth constantly filling with thick dark-coloured foam, which he spits out, and snatches with his fingers and throws about him, and on those around him. The extremities are colder, and the hands more blue; the pulse is not perceptible at the wrist, and the heart's action is exceedingly feeble. There have been no spasms since 9 o'clock; he became gradually more feeble; the inspirations were finally not more than two or three in a minute; and he died calmly and without further struggle at 2 P. M., little more than fifty hours from the first time that any spasm was observed.

Such, then, is the full account of a case of hydrophobia, and it presents you with the ordinary symptoms of the disease. This is, I think, the tenth case I have myself seen, and they have all agreed in the main features, with some little variations in minor points.

In this case the actual hydrophobia, or dread of water, was very great during most of the time; but this horror is by no means constant, and forms no essential part of the disease. I have even seen patients glad to swallow frequently, with much effort and exertion of the will, it is true, but still they did it on account of the comfort they derived from the act, probably by washing away the viscid secretions of the throat. The spasms, as you saw, were principally of the muscles of the fauces, throat, and neck, and are generally confined to these parts. In this boy, they twice affected the muscles of the back; and in another case which I saw, the hands were contracted as in chorea; but the extension of spasm below the neck is accidental. You saw in this case, as a very prominent symptom, a very curious delirium; and the violence of action of this boy was as great as I have almost ever witnessed. More or less delirium is, however, always present; at least, I have always seen some wandering; it may be of a pleasing kind, judging by the nature of the conversation, and the smiles I have seen in one little boy whom I nursed from the beginning to the end of the disease; and it was so quiet, that he could always be roused from it to answer rationally. Even then, however, towards the patient's death, the same horror came on that Havens showed, and the child buried himself in the clothes, and held out his hands to protect himself from imaginary dangers. On the other hand, the delirium may be most furious. I remember a case in one of the hospitals (Guy's, I think), where everybody was glad to run away and lock the door on the patient to protect himself; and the man broke the windows and

railings and got out, and was with difficulty secured again. More or less delirium is, however, I repeat, always present as far as I know; and I dwell on this marked symptom, because I have been informed by one of you that a physician has remarked that he has seen seven cases of hydrophobia, in none of which was there delirium; leaving it to be implied that the Indian hemp might have produced it in our present case, as it is a common effect of that medicine. I have just looked at the notes of a good many cases, thirty-five, I think, of hydrophobia, and in only one do I see it stated that the patient never lost his senses, while delirium is mentioned in all the others; but in this very one the patient is said to have run away from his doctors and escaped into the village, frightened at the gurgling of some injection that was administered to him, which is not quite the action of a person in his senses; and a strait waistcoat was used afterwards for the patient who is said not to have lost his senses. The delirium of hydrophobia is exactly like that of mania, so that the patients will sometimes not know their relations, and will take a fancy in favour of or against particular individuals. A little child of four years old would not allow a particle of clothing to cover him; and patients constantly fancy that insects or other animals are present, and will sometimes show the most violent irritation at imaginary or real objects; for instance, a man with hydrophobia lay not far from a really insane person, who uttered frequently a particular word, "sharp," at which the hydrophobic patient was so offended, that he threatened to tear him piecemeal for doing so. There is often, as in this case, a remission of the symptoms in the last twenty-four hours, so that the patient can eat and drink without difficulty, and lie quiet and free from spasm; and you must not, therefore, always attribute this temporary quiet to medicine; fresh symptoms afterwards come on, as they did here, and are fatal. Then, again, you observed the vomiting of dark matter, and the spitting the thick mucus from the mouth, which are always more or less present, and have nothing to do with the medicine taken into the stomach, as the appearance is nearly the same whatever remedy is used. Lastly, you saw the mode of death, which is the common one; not by suffocation, but by gradual failure of the nervous power, and of the heart's action, rather than of respiration.

I will next read the account of the post-mortem examination.

There was a small quantity of serum in the spinal canal, both in the upper part of the cervical region and in the lumbar region, the membranes and cord being apparently perfectly healthy; the posterior spinal veins were less turgid than in many cases, although the body had been lying on its back since the death of the patient. The membranes of the brain were apparently healthy, and there was no effusion in the arachnoid or sub-arachnoid cellular tissue. Both substances of the brain were, throughout their whole extent, congested, and of a darker colour than usual; the grey matter presented a

marked pinkish colour, especially that portion which was in contact with the pia mater. The ventricles did not contain more fluid than natural. The cerebellum, pons Varolii, and medulla oblongata, were congested, and of a pinkish colour, but these appearances were not more marked here than in other portions of the brain. The substance of the medulla oblongata was carefully examined in the microscope by Mr. Toynbee and Mr. Hewett, but presented nothing remarkable. The different parts of the brain were somewhat softer than usual, but this softness was general, and most probably attributable to the time of the patient's death, and the state of the weather. The mucous follicles at the base of the tongue were very large and numerous, and the mucous membrane of the fauces and pharynx congested, and of a dark venous colour—the discoloration did not extend beyond the level of the superior margin of the thyroid cartilage; below this the mucous membrane of the pharynx and œsophagus was of its natural colour; the mucous membrane of the windpipe was but slightly congested, and there was no thickening of the submucous tissue of the larynx.

The right lung was universally and firmly adherent—of course from old disease—and both lungs gorged with blood, but without serum (that is to say, there was not the discharge of serum into the air-vessels to relieve the overloaded blood-vessels usually seen in any form of suffocation), especially at the back part, where they were very soft, and of a dark colour. A few scattered tubercles were found in the right lung; the submucous membrane of the bronchi was slightly congested. The heart was natural, the blood contained in its cavities being small in quantity, very dark and thick, and with one or two small loose coagula, also of a dark colour; they presented no remarkable appearance in the microscope.

There were some small circumscribed arborescent congestions in the immediate neighbourhood of the œsophageal region of the stomach, and no other apparent lesion of this organ; these spots appeared like ecchymoses in some parts, but it did not seem that there was really any extravasation of blood. The liver, spleen, kidneys, and intestines, were congested, but otherwise healthy. Both pneumogastric nerves were, throughout their whole extent, minutely examined, but they presented nothing remarkable.

Exactly such is the usual result of examination after death; the patches of congestion in the stomach, and the dark colour of the fauces, and the general vascularity of every part of the body, being the only circumstances invariably found, which are, however, obviously insufficient to account for the fatal symptoms,—together with the appearance of the blood, before noticed, in which there may be material change of property. The congestion is, indeed, frequently spoken of as inflammation, but not often by those conversant with morbid anatomy, nor do the symptoms during life at all point to inflammatory action. Whether the actual appearances of the throat

and stomach are not rather the effect of disease than a cause capable of exciting the irritative spasms, is very doubtful; the nerves, at any rate, going from these parts show nothing wrong.

Very nearly similar to this is the evidence afforded by examination of the rabid dog, as I have myself repeatedly seen. This is Mr. Youatt's account of the matter, only that you must substitute congestion for inflammation :— "After death, there will invariably be found more or less inflammation of the mucous coat of the stomach, sometimes confined to the rugæ, at other times in patches, generally with spots of extravasated blood, and occasionally intense, and occupying the whole of that viscus. The stomach will likewise contain some portion of indigestible matter (hair, straw, dung), and occasionally it will be distended and completely filled with an incongruous mass. The lungs will usually present appearances of inflammation more intense in one, and generally the left lung, than in the other. Some particular points or patches will be of a deep colour, while the neighbouring portions are unaffected. The sublingual and parotid glands will invariably be found enlarged, and there will also be a certain portion of inflammation, sometimes intense, and at other times assuming only a faint blush, on the edge of the epiglottis, or in the rima glottidis, or in the angle of the larynx attached to it."

Assuming that hydrophobia is communicated from one animal to another, you would naturally expect that there would be some variety of symptoms in different species, and it seems probable *à priori* that a comparison of the disease in various genera would help us to a knowledge of its essential nature. It was from the dog that this boy had the disease, and it is from this animal that most persons derive it; and as you should be acquainted with the nature of *rabies canina*, and the books in your hands do not contain a very complete account of it, I will next read to you its history, as related by a most intelligent veterinary surgeon, Mr. Youatt, who has seen more of it, perhaps, than any other person in the kingdom.

"The symptoms of rabies in the dog are the following, and nearly in the order in which they occur : An earnest licking, or scratching, or rubbing, of some particular part ; sullenness, and a disposition to hide from observation ; considerable costiveness, and an occasional vomiting ; an eager search for indigestible substances, as bits of thread, hair, straw, and dung ; an occasional inclination to eat its own dung, and a general propensity to lap its own urine : the two last are perfectly characteristic circumstances." Symptoms, these, which are not present in our own species. "The dog becomes irritable ; quarrels with his companions ; eagerly hunts and worries the cat ; mumbles the hand and foot of its master, or perhaps suddenly bites it, and then crouches and asks pardon. As the disease proceeds the eyes become red ; they have a peculiar bright and fierce expression ; some degree of strabismus

or squinting very early appears (not the protrusion of the membrana nictitans or haw over the eye, which in distemper often gives the appearance of squinting, but an actual distortion of the eyes); the lid of one eye is evidently more contracted than the other; twitchings occur round the eye, they gradually spread over that cheek, and finally over the whole face. In the latter stages of the disease that eye frequently assumes a dull green colour, and at length becomes a mass of ulceration." All these remarkable affections of the nerves of the eyes and the portio dura are in addition, you will observe, to what you saw in the boy. "After the second day the dog usually begins to lose a perfect control over the voluntary muscles; he catches at his food with an eager snap, as if uncertain whether he could seize it, and he often fails in the attempt. He either bolts his meat almost unchewed, or in the attempt to chew it drops it from his mouth. This want of power over the muscles of the jaw, tongue, and throat, increases, until the lower jaw becomes dependent, and is of a dark and almost black colour. The animal is able, however, by a sudden convulsive effort, to close his jaws and to inflict a severe bite.

"The dog is in incessant action; he scrapes his bed together, disposes it under him in various forms, shifts his posture every instant, starts up and eagerly gazes at some real or imaginary object; a peculiar kind of delirium comes on; he traces the fancied path of some imaginary object floating around him; he fixes his gaze instantly at some spot in the wall or partition, and suddenly plunges and snaps at it; his eyes then close, and his head droops; but the next instant he starts again into renewed activity: he is in an instant recalled from the delirium by the cries of his master, and listens attentively to his commands, but as soon as his master ceases to address him he relapses into his former mental wandering." All this is exactly like the delirium of man.

"His thirst is excessive (there is no hydrophobia in the dog), and the power over the muscles concerned in deglutition being impaired, he plunges his face into the water, up to the very eyes, and assiduously but ineffectually attempts to lap." I may observe as to this point how completely the symptom of hydrophobia generally present in the human species is vulgarly transferred to the dog. I actually remember its being stated that a London magistrate ordered a suspected dog to be taken to the pump, and there trying to drink, it was immediately turned loose again, with perfect confidence that it was not mad, after this very satisfactory test!

"His desire to do mischief depends much on his previous disposition and habits; I have known it to proceed not beyond an occasional snap, and that only when purposely irritated. But with the fighting dog the scene is often terrific. He springs to the end of his chain; he darts with ferocity at some object which he conceives to be within his reach; he diligently tears to

pieces everything around him; the carpet or rug is shaken with savage violence, the door or partition is gnawed asunder; and so eager is he in the work of destruction, and so regardless of bodily pain, that he not unfrequently breaks one of his own tushes.

"If he effects his escape, he wanders about, sometimes merely attacking those dogs which fall in his way, and at other times he diligently and perseveringly hunts out his prey; he overcomes every obstacle to effect his purpose, and unless he has been detected in the march of death, he returns in about twenty-four hours, completely exhausted, to the habitation of his master."

I am inclined to think there may be some truth in this contrast with regard to ourselves also, in explanation of the difference of violence. I have seen a gentle and amiable boy, quiet and easily persuaded, and without any inclination to do mischief, and a cruel and a quarrelsome one exceedingly violent, fighting and abusing every one near him, and driving every body away. What this boy's natural disposition was I have not heard, but he was certainly at times very delirious and violent.

"He frequently utters a short and peculiar howl, which, if once heard, can rarely be forgotten; or if he barks, it is a short coarse inward sound, altogether dissimilar from his usual tone. In the latter stages of the disease a viscid saliva flows from his mouth with which the surface of the water that may be placed before him is covered in a few minutes, and his breathing is attended with a harsh grating sound, as if impeded by the phlegm in the respiratory passages." In this also the appearance is much like what you have recently seen in the boy.

"The loss of power over the voluntary muscles extends after the third day through his whole frame, and is particularly evident in the loins; he staggers in his gait, and there is an uncertainty in all his motions, and he frequently falls, not only when he attempts to walk, but when he stands, balancing himself as well as he can. On the fourth or fifth day of the disease he dies, sometimes in convulsions, but more frequently without a struggle."

In these latter symptoms is the greatest difference between the disease in the dog and in ourselves. While the earlier phenomena are the same, or nearly so, the paralysis observed in dogs is never found, I believe, in man; the muscular power is elevated rather than depressed, and that even till a late period,—in this boy nearly to the last half hour. A man often exerts himself most vigorously; a patient of my brother's in the Middlesex Hospital, in alarm, jumped over one bed after another in the ward, and was with difficulty brought back. And some restraint is generally required; the brain seems excited in man; but it is at last oppressed so as to cause palsy in the dog.

In observing this case of hydrophobia you cannot but have been struck by the resemblance that it bore in many respects to the cases of tetanus which

you see so much more frequently. In both diseases a wound or injury, in which nothing particular is observed locally, is followed after a certain time by the most painful and distressing spasmodic contraction of the muscles. In both diseases there is the most exquisite irritability of the sentient surfaces, the skin, the ear, the eye, so that the touch, or even the approach of the finger, a breath of air, a noise, mental excitement, immediately causes violent spasm. In both diseases the termination is almost always fatal, in hydrophobia perhaps invariably so, and this commonly in both cases from 48 to 60 hours from the commencement of the malady, at the latest on the third fourth, or fifth day. In neither case is there a satisfactory explanation of the symptoms, or of the cause of the patient's death, in any morbid appearance which has been observed with sufficient constancy, in any vital part, to be associated with these symptoms.

And yet, notwithstanding the strong analogy between tetanus and hydrophobia, there are many points of difference. In tetanus the spasms affect the muscles supplied by the fifth nerve in all cases ; in most the muscles of the trunk of the body, and in a few cases those of the extremities also ; the muscles of deglutition are much affected, but many others also participate in .the spasms, the whole spinal column being deranged in its actions. In hydrophobia, on the contrary, it is very seldom that any other muscles besides those of the throat are spasmodically contracted ; the fifth nerve, and those of the spine, are nearly unchanged, and the eighth pair, with the phrenic nerves, seem to be chiefly influenced by the disease. In tetanus the muscles are permanently rigid, the spasm being constant, with temporary increase; in hydrophobia the spasms are only occasional, and the relaxation of the muscles is perfect in the intervals. In tetanus the spinal system is much disordered, but the cerebral functions are comparatively unimpaired, and the mental powers almost always perfect to the last ; delirium is hardly ever observed. In hydrophobia, on the contrary, while the voluntary muscles dependent on the spine are perfectly obedient to the will in man, and paralyzed to a certain degree in the dog, the mental faculties are seriously impaired in all animals, and delirium and absolute mania are added to the spasm in almost every case. While tetanus is not unfrequently idiopathic, occurring spontaneously, as from a chilblain, or without any apparent cause, hydrophobia never occurs, in my opinion, except from inoculation ; and the same is asserted by the best observers as to the lower animals. Many cases, indeed, have been published of spasmodic affections, in which convulsions and dysphagia, and even hydrophobia, formed a prominent part, some of which ended fatally, but of which most recovered ; but all these cases in my opinion want some of the essential characters of real hydrophobia, such as you saw in this boy. Whatever was its first origin, like syphilis, there is, I feel confident, no reason to believe in its spontaneous occurrence now ; there is no doubt always

inoculation, although some few persons think otherwise. Here, then, is the most important dissimilarity between the two diseases; traumatic tetanus may arise from any kind of injury whatever, a burn, a wound, a dislocation without any wound, a splinter inserted in a nerve or fascia, a mere laceration, a mere scratch; in hydrophobia, on the contrary, there must be inoculation from the saliva and other secretions of the mouth of a rabid animal. There is no proof, I think, that the poison resides in the saliva alone, as is usually supposed; neither is there any apparent foundation for the opinion which some have entertained, that it is contained in the secretions of the bronchial tubes; on the contrary, you saw here that the dark congestion of the fauces distinctly terminated at the glottis. It would appear quite as probable that the poison is formed in the tough viscid secretion of the fauces, which gives so much distress to the patient, those parts being invariably much altered in colour, and the glands enlarged. With this fluid of the mouth, whether mucous or salivary, or both, repeated experiments have been made, and have constantly succeeded in producing the disease in the inoculated animal. It is not necessary that a bite should be inflicted; the mere licking a part in which there is an abrasion of any kind is quite sufficient.

Let us see how this is proved as to the boy whose case we are considering. What has been ascertained with regard to this point at the inquest, or since that time, is this. The dog, which was a spaniel belonging to the resident at the next house, was being driven by the boy out of his own house when it bit him; and it had been observed by its master to have been ill previous to this. It was then tied up, but a cat was also bitten by the dog, and a servant-girl was bitten on the thumb, and the cat's kitten was attacked and killed by the dog at the same time that it injured the boy; but it does not appear in the notes whether the servant and the cat were injured at this time or subsequently. The dog having been tied up, is then said to have fallen off in its appetite, to have had frequent catchings in the throat, and become snappish, and died about a week afterwards, according to the account the boy himself gave me; but as I have been informed by others, only five days ago. The former account would have been not unlikely if the dog died of rabies; in the latter case, though not impossible, the animal must have recovered from the usual fatal symptoms of the disorder.* It appears further that the cat was ill for some days after the bite, but soon recovered; about a fortnight afterwards, however (and the lower animals evince the disease much earlier than ourselves) it became stupid, and giddy, and wild, running up and down stairs, and refusing food, and while in this state scratched the boy's hand; it died three or four days afterwards, having had several fits; an account which

* It appears, in fact, from the evidence of the owner of the dog, that the animal really died on the Thursday following, which was April the 25th, the fourth day after he bit the boy.

is not unlike the symptoms of the disease in this animal. A medical man examined the stomach of the cat, and a farrier opened the dog, and both assured the owner of the dog that they died from natural causes. We have already seen, however, that such an examination is not conclusive, particularly, of course, if the dog died so recently.

Assuming, then, that inoculation is the cause of the disease in man, it is, as you are aware, most commonly produced by the dog, or other canine animal, but the cat has frequently occasioned hydrophobia in man and in other animals; and probably many other animals are capable of communicating it; experiments have been made, which make this probable of the cow; still it is rare except in the canine and feline races. Whether one human being can give hydrophobia to another has not been proved, though there seems no reason why it should not be so. We have, however, one experiment only, which is said to have succeeded; this is on the authority of Magendie and Breschet, with regard to a patient of Dupuytren's, with whose saliva a dog is said to have been made rabid, and a second dog from this, but in the third trial it failed. It has been said, too, that rabies is incapable of being propagated through more than three individuals of any kind. Mr. Youatt has told me, however, that he has produced the disease at least four times successively, without reference to former sources for the first dog.

Thus, then, hydrophobia is the result of an inoculated poison, but no doubt, as with all contagious diseases, a certain susceptibility is necessary in each person or other animal to make the virus act. It is thus said by Mr. Youatt that he has often known rabies come on as if from the excitement of parturition, or when the animal was at heat, when perhaps the disease might otherwise have been escaped. From this cause it is, in part, that fortunately so few persons have hydrophobia, many who are bitten by actually rabid animals not being susceptible of the poison. Many again who are bitten, and might be in a state for it, do not receive the poison, because it is wiped off by the clothes, or because several have been bitten successively. I remember an account of a physician, a Dr. Ingelhong, who was engaged in some experiments with tiennas poison, and accidentally let the knife he was using drop down upon his foot, on which he sat down, and said, "in five minutes I am a dead man." When two or three minutes had elapsed, however, the Dr. thought he might as well wipe his foot, and shortly found that he was not dead, and that the poison had been arrested by the clothes. It might be curious to speculate on the state of mind of persons in this state of expectation, of which some idea may be formed from the picture given by Sir Walter Scott in "Old Mortality."

The disease is, in fact, from these and other causes, much more rare than the public fears would lead one to imagine. I observe, for example, that, in the last Report of the Registrar-General (that for 1841), the total deaths in

England and Wales having been 343,847, only 7 persons died of hydrophobia, of whom three died in the metropolis, two in the western district, and one in Wales; while, in the same time, no less than 118 died of tetanus. What proportion of those bitten by really rabid animals are likely to have hydrophobia I do not know; we are informed by Dr. Trolliet, that out of twenty-three persons bitten by a wolf in 1817, no less than fourteen died of hydrophobia, while in many other cases only one will have the disease out of ten or twenty; for instance Dr. J. Hunter found, when twenty-one persons were bitten, that of them one only died. It seems very likely that the poison may be more virulent in one rabid animal than another, and much may depend on the mode of attack. The wolf, for instance, is said to attack the face or hands; this boy was bitten in the hand, and this and other exposed parts are more likely to be inoculated. I have been told by Mr. Youatt that he had been bitten seven times, and this not by dogs of whom many were not rabid, but by animals proved to be actually mad; and his servant had been bitten four times, but every time with impunity. I was much indebted to this gentleman some years ago for his assistance, while I was engaged in some experiments on several different remedies on rabid dogs; for it is not an agreeable task, without being perfectly conversant with their habits, to be putting medicines into the mouths of mad dogs.

It seems very likely that rabies abounds in certain seasons, so that in some years there are very few cases, while in others it is very prevalent. On looking at the Registrar-General's Report, which I have just alluded to, I observe that in 1838 twenty-four persons died of hydrophobia, fifteen in 1839, twelve in 1840, and only seven in 1841. Tetanus, on the other hand, not being a contagious or epidemic disease, is pretty uniform, so that there died of it, in the same years, 129, 122, 142, and 118, respectively; and the deaths altogether were more numerous in the year in which the greatest number died of this disease.

It is very probable, too, as with other epidemic diseases, that hydrophobia may have somewhat regular periods of increment and decrement, as it is termed, which makes the mortality very variable. There died, for instance, in the same years, of small-pox, above 16,000, 9,000, 10,000, and 6,000; and of scarlatina, at first only 5,000 and upwards, then 10,000, 19,000, and 14,000, in round numbers. So the hydrophobia diminished each successive year, and again perhaps will increase to a larger number.

Like all contagious diseases, hydrophobia has a certain period of incubation, as it is called, in which the poison produces no sensible effect. In this boy you found that just seven weeks elapsed from the bite till the time when the symptoms became manifest, which is a very common period; from six weeks to three months is the time in which almost all the cases of hydrophobia have been seen. I have here a table of about 130 cases of the disease, of which

seventeen occurred from eighteen to thirty days after inoculation, the former date being one of the earliest periods at which a real case of hydrophobia has been observed in man : from 30 to 59 days, that is to say in the second month, no less than sixty-three took place, almost exactly half, you perceive, of the whole number ; from the second to the third month twenty-three cases were seen ; so that thus within the first three months five-sixths of the whole number took place ; in the fourth month nine cases occurred : after this they were seen at various periods, one or two in each month, the fifth, sixth, seventh, and so on, up to the nineteenth, which was a case under Mr. Nourse's care, and is the latest time at which hydrophobia can fairly be said to have been known ; there is, indeed, a case of Dr. Bardsley's, in which hydrophobia is said to have been produced by a bite twelve years before, but it appears most improbable that this was really the case.

How long the poison is latent in the wound is quite uncertain, so that precautions ought to be taken in any suspected case to the last. In many cases there is observed in the cicatrix a degree of pain and heat running up the arm a day or two before the symptoms manifest themselves ; but it was not the case in the present instance, nor is it by any means constant. The same uncertainty is seen in tetanus. The woman, whose thumb was bitten by the same dog as this boy, was desired by Mr. Banister to come here ; but very likely she will not. Undoubtedly, in every case where it appears practicable, the wound or cicatrix should be excised ; and if any doubt exists whether the whole has been taken away, caustic should be afterwards used ; so should it, also, when the wounds are too numerous or extensive to have the excision performed. What caustic, however, should you employ ? Theoretically, no doubt, the *kali purum* would appear more likely to destroy every part in which the poison may have insinuated itself ; but it is not at all impossible that one caustic may have greater power than another of coagulating, and neutralizing or decomposing the secretion in which the poison is contained. I do not know any data on which this question can be decided, derived from a sufficient number of cases. There was a record of 106 cases of bites treated by caustic potash, by Dr. Ekstrom, who advocated the propriety of keeping the wound open for a long time, out of which one case of hydrophobia took place, because, as he alleges, the patient did not keep the wound discharging long enough. If the caustic is well applied, the sooner it heals, I should imagine, the better. Mr. Youatt told me, some years ago, that a great many persons, in consequence of his peculiar practice, applied to him after they had been bitten by dogs, and that he always used lunar caustic, which he had employed upon himself and his servant every time, and in round numbers perhaps to 400 others ; and that out of this number one had died of fright, but none had had hydrophobia. This is a considerable number, of whom many must have been bitten by really mad

dogs, and on the whole I am rather inclined to favour the *argenti nitras*, than the *potassa fusa*, if it can be got to every suspected part.

I have not time to describe to you the great variety of remedies which have been proposed for the prevention or cure of hydrophobia, which you will find, however, in a very good article on the subject, in Cooper's Surgical Dictionary, and in other works commonly in your hands. All preventive remedies must necessarily act on the principle that many would escape the disease even if nothing were done. Some vegetable powders were sent to Mr. Tatum as an infallible cure for hydrophobia, of which the direction was, that as much as would lie on a knife should be given three mornings, fasting, in liquid, that the patient should not eat till 12 o'clock, and that while under their use he should not have supper. A curious idea this; to talk of dinners and suppers to a person dying in forty-eight hours of hydrophobia! And all the rest are similar.

As every method had hitherto failed, out of the great number which have been employed, I determined, in the treatment of this case, to give a trial to a remedy which has been said to cure hydrophobia in India, and I believe has not yet been given in this country; and the boy took, as we have seen, as much as thirty-six grains of recent extract of the *cannabis indica* without any apparent effect whatever, unless it were some increase of the maniacal delirium, of which I am not certain; certainly without the great relief I have seen from prussic acid, or from the Mikania Guaco, which I tried in several cases, both in the dog and in man, after some had been sent to me by Sir Robert Ker Porter,—or from opium; the scutellaria, and other remedies, will also mitigate the disease in dogs.

But, after all, what do you gain if you remove altogether the spasms, which are so prominent a symptom during the greater part of the complaint? These spasms are only a symptom of the disorder, whatever it may be, just as they are in tetanus, indicating some obscure irritation of the nervous centres from some unknown cause. There are many hours' quiet in hydrophobia, the spasms in this case scarcely being present for more than two hours out of the last twelve, but the disease was still going on. So, also, in tetanus, I have repeatedly seen persons recover, in whom the tetanic spasms remained without remission; and I have seen them quite removed by remedies, so that a patient has said, an hour or two after the treatment has been begun, that he was in heaven to what he had been, and the spasms have almost entirely ceased, and only a little has returned just before his death; yet, nevertheless, he has died twenty-four hours afterwards, perhaps very nearly in the same time that he would have died if the spasms had remained.

I had at one time almost made up my mind to open the windpipe in this boy, which has been proposed by Dr. Physic, I believe, and by my former

colleague, Mr. Mayo, and has received countenance from other persons also. I rather think it was done on one occasion, and that the patient died earlier than he otherwise might have done. Certainly I should have run much risk if I had tried to perform it when I saw the boy in the afternoon, and found that the cannabis had produced no beneficial effect, for the greatest violence was produced by my merely attempting to put my hand to him to feel the state of the larynx; he immediately began jumping up and fighting with his hands, and I am satisfied if I had shown any instrument, or tried to open the trachea, I should have run much risk of causing instant suffocation. And after all, I am inclined to think the suggestion more plausible than likely to be generally useful; there is indeed spasm about the glottis, and it is just possible that an opening existing in the trachea, an individual, both in hydrophobia and tetanus might, in some rare instance, have his life prolonged; but the cause of death is not here, in almost any case of either disorder; the spasm in hydrophobia does not last long at a time, there are many intervals of rest, often many hours, and the appearances after death are not those of suffocation; the patient rather dies from failure of the heart's action, the pulse becoming exceedingly quick and feeble, gradually ceases altogether, while respiration is in many instances going on quietly and without difficulty; there is indeed general congestion of all the tissues of the body, but it is of all the capillary vessels, as it seems to me, not of the veins only, as in deaths from any species of suffocation.

We have, in fact, no principle to guide us in the treatment of hydrophobia. We do not even know the mode in which the poison acts, whether it is carried into the circulation by the absorbents, as is most probable, so as to effect a change in the whole blood, just as the poison of small-pox or syphilis does—(and we have seen that the blood had a peculiar appearance to the eye) —or whether, as is often supposed, it causes some mysterious effect upon the nerves of the injured part, and, through them, on the brain and nervous centres.

What it seems to me should be our endeavour is this—to make ourselves acquainted, if possible, with the earliest or preliminary symptoms; for most probably hydrophobia may always remain, as it has hitherto done, beyond our power, after the advanced stage in which alone it is now recognized has been reached. That there is such a precursory stage is certain in most instances, though they are so slight as usually to escape observation. In this boy nothing remarkable was noticed till about fifty or sixty hours before his death; but in many cases some indisposition has been complained of for a day or two beforehand; a feeling of uneasiness, chilliness, headache, weariness, or sleeplessness and restlessness, nothing more, in fact, than is often the result of derangement of the stomach and digestive organs, without fever in general; still, however, some symptoms may lurk behind which

careful investigation of suspected cases months after a bite, even, may succeed in detecting, so as to lead to the discovery of a cure.

At the same time, that a cure of hydrophobia is possible, is rendered not unlikely, by the fact that rabies is sometimes cured, or recovered from, in dogs, of which there seems no doubt, from the experience of Mr. Youatt and others who have attended to the subject. So, also, it is perhaps sometimes in the human subject; at least more than one instance has been recorded in which several persons at once in the same family or neighbourhood have been bitten by the same animal, of whom one has died, and of the others some one or more have, about the same time, suffered from an indisposition—not fright—but like what I have just alluded to, from which they have recovered, and which might not have attracted notice but for the accompanying circumstances. This indisposition may have been *essentially* hydrophobia, though without coming to its usual stage. At any rate, I am convinced that in such a line of investigation alone is any cure to be anticipated.

Such, then, gentlemen, are some of the reflections which this case furnishes to us, and our time allows; and, as it was to happen, I am glad that it has fallen under your notice, though I must say as it is so frightful a disorder, I hope it will be long before you witness another of the same kind.

[*Medical Gazette*, vol. xxxiv., p. 417.

REMARKS ON THE DIAGNOSIS OF FOREIGN BODIES IN THE LARYNX.

READ FEBRUARY 11TH, 1840.

So many cases have been recorded in which foreign bodies have entered the windpipe, and the propriety of extracting them by operation is so well established, that any remarks upon the subject may perhaps appear superfluous. Yet so many of these recorded cases are of a chronic kind, in which an operation was not performed till many weeks or months after the

occurrence of the accident, or in which a fatal result ensued, because no operation was practised, as to make it evident that the diagnosis is either attended with much difficulty, or that surgeons have been more reluctant than they should have been, to resort to the only means that can be successful; except in some rare cases, which ought to be considered only as exceptions to the general rule. It is said, indeed, by Mr. Porter, that many children are probably carried off by this accident, who have been supposed to die of croup, and that consequently the difficulty of recognizing the nature of the case makes the occurrence of the accident appear much less frequent than it really is; and the remark is probably not without foundation, when so experienced a surgeon as Dessault is found to enumerate among the general signs of the accident, "a difficulty more or less considerable in deglutition, which is sometimes very painful, and a sensible alteration in the voice, which is commonly hoarse, and is sometimes completely prevented;" the latter sign being in fact by no means frequent, according to the cases on record, and the former being actually rather a sign that the foreign body is *not* in the windpipe, but more probably behind it, in the œsophagus.

Among other points desirable to be ascertained, when the nature of the accident is suspected, is the probable situation of the intruding body, as indicated by the symptoms which it occasions in different parts of the air passages. I am led therefore to think the following case may not be devoid of interest to the Society:—

On November 18th, I was asked to see Miss S., twelve years of age, who had been suddenly seized, while taking some soup about eight hours before, with violent vomiting, and suffocating cough, which lasted for a short time, and then left her with a noise in breathing, which was somewhat difficult, and with a sense of pain beneath the cricoid cartilage. She believed she had felt a piece of bone in her mouth at the time, and that she had swallowed it. About two hours after the accident an emetic had been administered by Mr. Davis, the assistant of a medical man in the neighbourhood, which had brought up some solid meat, which seemed to have a little relieved her.

At the time I saw her she was breathing with a croupy noise at each inspiration, but without much labour, and she complained of some pain and tenderness in the larynx, referred more particularly to the cricoid cartilage. She could swallow without any difficulty, and on examination with a pair of curved forceps, it was evident that there was nothing in the œsophagus at the seat of the pain. The finger, passed behind the epiglottis, felt nothing like a foreign body in that situation; her voice was natural, and there was no cough, nor had there been any since the accident, to which attention would otherwise have been drawn. The tongue was a little dirty, she was flushed, and the eyes suffused and the pulse quickened, and there was some

anxiety of expression. She had been in good health before the aeeident, exeept that she had a slight eold the day before, with a sense of tightness aeross the epigastrium. The lungs appeared healthy, and there was no other apparent eause for the eroupy noise and diffieulty of respiration exeept a good deal of fulness and redness of the tonsils and palate and fauees, whieh might extend to the larynx, but whieh might also have been the consequenee of the vomiting oeeasioned by the aecident and by the emetie.

There could, altogether, be little doubt that her supposition was eorreet, and that a pieee of bone had passed the wrong way; but as there were no immediately urgent symptoms, as there had been no threatening of suffoeating eough since the aecident, now eight hours ago, and the diffieulty of breathing was not great, and was less than it had been, and the foreign body, if it were present, must therefore be nearly fixed, and could not be of large size, and as there was mueh fulness of the fauees, whieh might oeeasion some narrowing of the glottis, and as the eroupy noise was in inspiration only, as in eommon eroup, it was agreed to leave her till the morning, administering some ealomel and antimony, and applying a sinapism to the throat, and then to operate if no ehange took plaee.

On the sueeeeding morning the inflammatory redness and fulness of the fauees had nearly gone, the mustard poultiee had relieved her from all feeling of distress in breathing, and she was no longer feverish and flushed; but the noise in respiration was as eonstant as before, and was equally audible in expiration and in inspiration, and a little pain and tenderness remained below the erieoid cartilage. It was perfeetly elear, therefore, that the obstruetion was purely of a meehanieal nature, and was too eonsiderable to justify an expectation that it would probably be disengaged spontaneously. Mr. Babington was kind enough to see the patient with me, and eoneurred in this opinion, and also in thinking that the spaee between the thyroid and cricoid eartilages was so small as to make an incision into the traehea preferable to an operation in the former situation. I therefore made the usual opening into the traehea, just below the thyroid gland, whieh was unattended with any hæmorrhage, and removed a small pieee of two rings of the trachea, in the eentre of the ineision, whieh was made through three others also, and endeavoured to get the pieee of bone thrown out by making the patient eough repeatedly, but without avail. Feeling the foreign substanee with the probe, just above the opening, I then introdueed a pair of foreeps and extraeted it, not without some little violenee, from the manner in whieh it was fixed. It was a portion, as it seemed, of the spine, showing the eurved surfaee of the eanal of a vertebra in a neek of mutton, nearly half an ineh long, and a third of an ineh wide, the outer surfaee being very rough and irregular, so as to aeeount for its fixed position below the glottis.

The breathing beeame immediately free from sound, and she had neither

cough nor other unfavourable symptoms after the operation. The wound was at first lightly approximated, but the air scarcely escaped after the patient returned to bed, and the voice was perfectly restored in about three hours, by the union of the surfaces; the edges were therefore brought together more completely the next day, and the healing process went on favourably, without the occurrence of any circumstance worth notice.

Firstly. In by far the greater number of instances, a foreign body which has entered the windpipe continues to be moveable within the trachea. The chief circumstances determining the diagnosis of this accident are thus enumerated in the useful work of Mr. Ryland, the most recent upon the diseases of the larynx.

From laryngitis, or croup, he says, "this accident may be distinguished by the absence of fever at first; by the very sudden manner in which the symptoms came on; by the *intermission* in the difficulty of breathing, which sometimes continues for an hour or two; by the *noise* occasionally heard when the foreign body is impelled against the vocal cords; by the *excessive violence* of the *cough* after this occurrence, and most *particularly* by the chief difficulty of breathing being during the time the *expiratory* process is going on; whilst in laryngitis the chief difficulty is in the act of inspiration."

No doubt this account is generally correct, when the intruding substance is *within the trachea*, even when it has been surrounded by tenacious mucus, causing it, at the time of operation, to be adherent to the membrane of the tube, so as not to be immediately expelled, as in a case of Sir Charles Bell's at the Middlesex Hospital;* or when it has adhered by some roughness, as in a case of a piece of the jaw of a mackerel, extracted by Pelletan.† Yet it will be observed that in the preceding case scarcely one of these symptoms corresponded with what really took place. The attack was indeed sudden, so as by itself to render the case scarcely doubtful; but there *was* a good deal of feverish excitement when I first saw the patient, there was *no intermission* whatever in the difficulty of breathing, and for the same reason *no noise* could be heard by the striking of the substance against the vocal cords; there was absolutely *no cough* whatever after the first few seconds; and instead of the noise in breathing being chiefly in *inspiration*, it was heard, on the day of the accident only in *expiration*, and on the following day it was equally audible in *both portions* of the respiratory process.

Secondly. When a foreign body is moveable within the trachea, it has been frequently found to pass into the right bronchus; and some interesting cases of this kind have been published by Mr. Key, Dr. Houston, Mr. Liston, and others, who have shown the absence of the symptoms before enumerated, if

* *Medical Gazette*, vol. v., p. 74. † *Clinique Chirurgicale*, vol. i., p. 6.

it remains almost entirely in this situation, together with the new stethoscopic signs of its presence in the bronchus, viz., the freedom of the larynx from disease, and the occasional or permanent cessation of respiration in the lung of the affected side.

Thirdly. If the foreign body is actually fixed within the vocal cords, instant and sudden death has usually been the immediate result; whether it has been impacted in this situation at once, or has first moved freely within the trachea, and has been subsequently fixed in the glottis during a fit of coughing, as in an interesting case related by Mr. Porter.*

Fourthly. If it is fixed within the larynx in some other situation, as in the ventricles, without causing immediately fatal effects, a foreign body is yet generally said to occasion much distress and danger. "It will produce," it is said by Dr. Stokes, "more or less *violent* and *incessant attacks of cough* and *dyspnœa*, in which the lungs are found, on auscultation, to be sound, and the larynx to be the seat of the constriction, the permanency of which, together with the history, will point out the nature of the case." "It may happen," says Mr. Porter, "that if the body be round and polished and small, it shall occasion no symptom of distress, except *the cough* and the *difficulty of breathing*, and the patient may exist for a long time without the occurrence of those morbid actions which render the accident certainly fatal." The cough and obstruction to respiration being expected to be present, it is seen, even in such comparatively mild cases. These urgent symptoms were present, threatening suffocation, in a case in which Pelletan operated six weeks after the accident, and was obliged to slit up the cricoid cartilage to extract a button from this place; and in a case of Dessault's, which was fatal two years after a cherry-stone had been lodged in one of the ventricles, the same occasional fits of suffocation were produced by it; and Dessault advises the division of the thyroid cartilage when the foreign body is fixed in this situation.

But, fifthly, that a foreign body should be fixed in the larynx *below* the glottis, and that the symptoms should be much modified by this position, does not appear to have been noticed by writers upon this subject; except that the cough, in cases of foreign bodies within the air-tube, arising from the direct irritation of the glottis, the absence of this symptom, it has been remarked, may be considered as a presumptive proof that the foreign body is fixed somewhere in the tube. Even this remark, however, requires some correction, since it must be recollected that the fatal effects upon the *lungs* may occasion cough, although without so much distress, as in the cough produced by direct irritation of the glottis. The part of the larynx immediately below the glottis is not enumerated by any writer as one of the

* Porter on the Larynx.

situations in which a fixed foreign body is to be looked for, although some distinctions have been attempted to be drawn of the symptoms likely to be occasioned by the different situations I have before alluded to, viz., the glottis itself, or one of the ventricles of the larynx, or the tracheal tube, or one of the bronchi. I have lately looked over the accounts of between seventy and eighty cases related in various works, of the entrance of foreign bodies into the air-passages, and have met with only two that correspond with the preceeding case in the nature of the symptoms. One of these is related by M. Leseure, in the fifth volume of the Memoirs of the Academy of Surgery, and in it part of an apricot kernel appears to have been fixed in exactly the same position, directly under the cricoid cartilage. It differs, indeed, from mine in not having an operation performed, and being therefore fatal in sixty hours, from emphysema and congestion of the lungs, but it corresponds with mine in the *entire absence* of cough, the *constant whistling* sound, the unaffected state of the *voice*, and in the *fixed pain* at the part, and in the child being able to laugh, and speak, and eat, *as usual*, on the following day.

A second case is related by Mr. Bullock, in the eighteenth volume of the *Medical Gazette*, p. 951, in which a quartz pebble was lodged in the same position as in my patient, "partly within the cricoid cartilage, partly in the trachea," and in that also the symptoms were so mild as to mislead the attendant, notwithstanding the continued assertion of the child that the stone was lodged in the part, although they were much more severe than in mine in the first instance, there being for four days "a sense of soreness in the throat, with nausea, which was accompanied by occasional *slight paroxysms of cough*, with a copious *mucous* expectoration, and hoarseness of the voice."

It will be observed, that in this latter case there was some cough which was not at all produced in either of the two others; there was on the fifth day acute inflammation of the mucous membrane, after which there was *entire absence of cough*, and no *return of uneasiness in the throat*, till her death, eight weeks after the accident, from acute pneumonia of both lungs. The pebble was retained in its situation by a thick layer of organized lymph, and the calibre of the tube was so nearly obstructed as to render it difficult to pass an ordinary-sized probe downwards.

It appears, then, that in three cases in which a foreign body was fixed in the situation of the cricoid cartilage below the glottis, the severe paroxysms of coughing, which are invariably looked for as evidence of the presence of a foreign body, (but which really belong essentially to its presence in other parts of the tube) were entirely absent in two, and were mild in the third, so as to lead the surgeon to believe they could not arise from the entrance of the pebble, as the child asserted, and were afterwards entirely absent in the last

month of her life;—that even the voice was unaffected in two of the cases, although hoarse in the third case;—but that in all three cases there was soreness and uneasiness in the part where the foreign body was fixed, a *noise* in inspiration or expiration, or in both, from the mechanical effect of the intruding substance (mistaken indeed for croup in one of them,) and in all the *patient asserted* that something had been *swallowed.*

Where such circumstances as these are present to guide the surgeon, I conceive he is imperatively called upon to operate without much delay, since out of the only three cases with which I am acquainted, in which the foreign body has been thus lodged and fixed near the glottis, two were fatal; one within sixty hours by the immediate effects upon the lungs, though without any other symptom than in my own case; the other at a latter period, by the slower influence of inflammation; while in my patient a more fortunate result was met with, in consequence, it cannot be doubted, of the removal of the foreign body, at an early period, by an operation, which is seldom very difficult, except in very young children, and perhaps is never attended with any important risk.

[*Med. Chir. Trans.*, vol. xxiii., p. 96.

ON PUS IN THE LYMPHATIC VESSELS AND RECEPTACULUM CHYLI.

To Dr. Robert Lee.

My Dear Sir,—The following are the particulars of the case which I narrated at the meeting of the Medico-Chirurgical Society, when the second part of your interesting paper on Uterine Phlebitis was read. It is of importance, in connection with your paper, from the similarity of the symptoms to those which attend inflammation of the veins, and from the rare occurrence of inflammation of the substance of the uterus, in comparison with that of its surfaces, and also from the extent to which the pus had filled the absorbents, without any inflammation of the veins.

T. S., aged about 30, was admitted into St. George's Hospital, July 1, 1829,

under my care, in consequence of sloughing of the skin to some extent over a diseased bursa of the patella. The bursa was removed, which was a quarter of an inch thick, and a granulating surface established without more constitutional disturbance than had been excited by the sloughing, which was never very great; and she was going to leave the hospital in order to lie in, which event she expected in two or three weeks.

On the 14th, however, she was brought to bed in the hospital, the child being ill grown, and dying soon afterwards.

On the 16th, symptoms of puerperal peritonitis of a low character made their appearance, which was fatal on the 18th. The pain, I understand, was completely relieved by bleeding, but she never rallied after the commencement of the attack.

Some puriform lymph was found in the pelvis, but with no increase of vascularity in the peritoneum. A considerable quantity of the same kind of fluid was situated round the whole of the lower part of the uterus beneath the peritoneum, and in the cellular membrane among the fibres of the uterus, but none had been effused at the fundus.

In the broad ligaments some fluid was also effused, and on each side numerous large absorbent vessels were discovered passing up with the spermatic vessels to the receptaculum chyli, which was unusually distended. All these vessels and the reservoir itself were quite filled with fluid pus, but that in the receptaculum was mixed with lymph so as to be more solid; the vessels themselves were firmer and thicker than usual. The thoracic duct above this part was quite healthy, and contained only transparent lymph. The spermatic and uterine veins were all healthy. The uterus was scarcely contracted at all, and the internal surface of the lower half was soft and shreddy, and in a state of slough. The upper part, where no pus was found externally, was also healthy, or nearly so, on its inner surface. The rest of the viscera were healthy.

I am, my DEAR SIR,
Faithfully yours,
CÆSAR HAWKINS.

31, Half-Moon Street,
Oct. 31st, 1829.

[*Med. Chir. Trans.*, vol. xv., p. 432.

CASE ILLUSTRATIVE OF THE

QUANTITY OF FLUID SECRETED IN OVARIAN DROPSY.

To the Editor of the Medical Gazette.

SIR,—The following case of ovarian dropsy is so extraordinary as to the quantity of fluid secreted and removed by operation within a limited time, that I am induced to request your insertion of it. I have, indeed, seen a larger quantity removed by operation at one time than in either of the operations performed in this,—(for instance, Mr. Keate removed, at St. George's Hospital, 75 pints from a woman with ovarian dropsy, leaving some solid tumour still behind ;)—and there are also cases on record of a larger quantity of fluid having been removed altogether, during the patient's lifetime, but I know of none in which the quantity was so large within a certain period, nor have I met with any person who has seen any case at all approaching to this.

I am, SIR,

Your obedient Servant,

CÆSAR HAWKINS.

Half-Moon Street,
June 10, 1833.

Mrs. D. æt. 34, observed a tumour in the abdomen for the first time about April 1830.

She attended as an out-patient of St. George's Hospital for some time, under the care of Dr. Seymour, without succeeding in getting rid of her disease, and as it at last increased, so as to give her great distress and difficulty of breathing, I was requested to remove the fluid, which I did for the first time in November, 1830. The operation was repeated while she continued in the hospital, since which time I have performed the operation at her own home. During the whole of this time her health continued pretty good, except when the distention became very great, so that it was only for a few days before each operation that she suffered much pain and difficulty in respiration, requiring the use of opiates to procure any respite from her sufferings. The fluid which was evacuated was uniformly clear and transparent, looking more like the fluid of peritoneal dropsy than that of an ovarian tumour, except on account of its slightly mucilaginous appearance. It was almost always of a slight yellow colour, or nearly colourless, except on one occasion, when it had a brown colour, resembling the more common appearance of the fluid drawn from an ovarian tumour ; but this appeared to

have been owing to mixture with blood, as at the previous operation there was a stream of arterial blood from one of the vessels of the sac, which was readily controlled, however, by gathering up the integuments and the sac between the fingers, and making pressure for a minute or two. The fluid was uniformly destitute of albumen, and seemed to consist almost entirely of water mixed with mucilage, or muco-extractive matter, as it has been called by Dr. Mareet; it resembled, therefore, the contents of the aqueous encysted tumours of the liver, and other organs, of which I ventured to give some accounts at the meetings of the Medico-Chirurgical Society, a short notice of which may be seen in the *Medical Gazette*, vol. xi., pp. 390, 748.

There never was any inflammation of the sac, nor any other inconvenience from the operations; but erysipelas of the abdomen coming on a few days after the last puncture, the sac appeared to participate in the inflammation of the parietes, to which it was adherent, and contained after her death, on the 20th of May last, about two gallons of fluid, such as is usually seen in inflamed ovarian sacs; it was now thick and very adhesive, and mixed with a good deal of lymph and purulent secretion, with increased vascularity of the sac.

The account of the operations performed is as follows:—

Operations.	Date.	Pints.	Interval since the previous Operation.
1st,	November ... 1830	32	
2nd,	February 1831	30	3 months.
3rd,	May —	30	——
4th,	August 20th ... —	40	——
5th,	October 18th ... —	32	59 days.
6th,	December 8th ... —	48	51 —
7th,	January 18th ... 1832	48	41 —
8th,	March 3rd ... —	48	44 —
9th,	April 14th ... —	50	42 —
10th,	May 20th —	50	36 —
11th,	June 26th... ... —	52	37 —
12th,	July 30th... ... —	50	34 —
13th,	September 3rd... —	56	35 —
14th,	October 10th ... —	56	37 —
15th,	November 19th.. —	56	40 —
16th,	December 22nd.. —	57	33 —
17th,	January 24th ... 1833	58	33 —
18th,	February 26th... —	59	33 —
19th,	March 30th ... —	63	32 —
20th,	April 30th ... —	63	31 —
	Total, 978 Pints.		

It will be seen from the preceding table, that the operation was required twenty times in *two years and a half;* there being drawn off on the average

about 44 pints of fluid; the smallest quantity at any one time having been 30 pints, and the largest 63 pints—the whole quantity being 978 pints. It will be observed also, that *in one year* the operation was performed *eleven times;* the average quantity being above 56 pints, and the longest interval between any two operations having been 40 days; the whole of the fluid which was taken away amounting to the immense quantity of 620 pints in one year. During this time, therefore, there must have been secreted into the sac not much less than one pint and three quarters every day, although the quantity of liquid which she drank was often believed by her to be much less than this; and she secreted some urine also, though not much. Notwithstanding the immense quantity which was thus formed, she did not, till within the last few months, lose flesh much, nor was her general health much disturbed; neither did the immense size of the tumour cause any swelling of the lower limbs.

The fluid was all contained in one sac, so that the puncture was always made in the linea alba, nor was there any appearance of tumour left after the operations, till the last one or two, when I could feel something like solid tumour after the fluid was evacuated. On examination after death, however, a great number of smaller cells were found, containing different kinds of fluid, some of them having fluid like that generally evacuated, others containing purulent secretion, like that in the principal sac, and a few containing half solid gelatinous substance, like white of egg. The largest of these cells contained about a quart of fluid; the rest were much smaller, and they were all situated at the back and lower part of the chief sac, into which some of them projected. There was not in any of the cells any scrofulous matter, nor was any portion like that kind of ovarian tumour which resembles fungus hæmatodes in its appearance, many cases of which kind of tumour, which fell also under my observation, are published by Dr. Seymour in his work on the Ovaria.

There are two remarkable cases on record of ovarian dropsy, in which the whole quantity of fluid drawn off from the patients by operation was even greater than in the case which I have related, but the rapidity with which the fluid was secreted was much less than in my case. In one of these, Mr. Martineau, of Norwich, says he removed in twenty-five years the enormous quantity of six thousand six hundred and thirty-one pints. In each year, therefore, on an average, there were two hundred and sixty-four pints of fluid, while in my case the average was for each year three hundred and ninety-five pints. Another well-known case is related by Dr. Mead, in which the quantity of fluid drawn off was one thousand nine hundred and twenty pints in the course of five years and a half, which gives on an average three hundred and forty-nine pints for each year; this quantity is, therefore, nearer to, though still inferior to, what was secreted in the case of

my patient. Dr. Mead's patient was tapped no less than sixty-seven times during five years and a half, or twelve times in each year; the average in my case being only eight times in the same period; but, then, on the other hand, the average quantity of fluid drawn off in Dr. Mead's case was only about twenty-nine pints, while in my patient it amounted to about forty-nine pints.—[*Medical Gazette*, vol. xii., p. 458.]

CASE OF
STRICTURE OF THE COLON,
SUCCESSFULLY TREATED BY OPERATION,
WITH
AN ANALYSIS OF FORTY-FOUR CASES OF ARTIFICIAL ANUS.

Received Jan. 2nd.—Read Feb. 24th, 1852.

On July 21st, 1851, I was asked to meet Dr. Seymour and Mr. Malton in consultation on the case of a lady, aged 44, who, although naturally delicate, had been long free from any illness, except that she had twice experienced, in the preceding year, an attack of pain in the abdomen, which had each time passed off in a day or two, under the use of a gentle aperient; the usual condition of her bowels being that of moderate but constant relaxation, which had not been less marked before the present illness than in the earlier part of her life.

It appeared that on the present occasion, the bowels had not acted since the 15th, six days before my visit; that on the 17th, she had taken some of her usual aperient without effect, but did not feel ill till the 18th, since which time she had twice taken calomel and colocynth, and once some castor oil, and on the preceding day some castor oil and colocynth; and Mr. Malton had also tried enemata, which were not retained. I found her on the 21st with a natural pulse of nearly 80, and without much distress, but suffering from occasional vomiting, with a good deal of distension of the abdomen, though less than on the preceding day, and with some tenderness, especially in the centre between the umbilicus and pubes, where there was greater resistance and feeling of solidity than elsewhere. I may observe that this part continued throughout her illness, more tender and less tympanitic than the rest of the abdomen, a circumstance which has been often observed in stricture of the upper part of the rectum, and is therefore of importance as being calculated to lead to error of diagnosis.

I ascertained, on examination, that there was a very capacious rectum, free from any disease as far as the finger could be made to reach, but becoming slightly narrower where it began to turn towards the sigmoid flexure, as if the folds were brought towards each other. The use of a tube or bougie was somewhat difficult, and always required the introduction of the finger, on which it could be directed, not only to lead it correctly into the upper opening among the loose folds of the bowel, but also to throw forwards the uterus, which was retroverted, probably from the distended bowels above. Thus directed, the tube or bougie would pass onwards till firmly resisted by the obstruction, about ten or eleven inches from the anus, or, allowing for the elongation of the lower part by the pressure, about seven inches from that part. The rectum allowed about three quarters of a pint of injection to enter, but beyond this quantity the liquid always ran out again, and none whatever was ever felt to pass into the bowel above the stricture. Owing to a great degree of lateral distortion of the spine, the space between the ribs and the ilium was too small to allow of the diagnostic sign of bulging of the descending colon; but the other local signs left no doubt in my mind, from the first examination, that there was stricture in the lower part of the sigmoid flexure of the colon.

Daily attempts were made to dilate the stricture by a bougie carefully introduced, and pressed upwards with as much force as I considered prudent; and the bougie was generally followed by a long tube, through which the injection was urged with force till it ran out. At first it seemed that some little greater distance was gained by these means; and on several occasions hopes were given by the appearance of a little fæcal matter on the end of the bougie, and still more on the 25th, and several succeeding days, by some little pellets or powder of distinctly fæcal substance in the enemata. Even this, however, altogether ceased; and in the thirty days preceding the operation, the whole quantity of fæces which obtained a passage did not exceed two ounces.

On the 22nd, a week after the last motion, all medicine was intermitted, and in consequence of this the vomiting wholly ceased till the 29th, when we agreed to give some small quantities of saline purgative, of which, however, only two doses were taken, as a return of sickness and distress, and loss of sleep, and acceleration of pulse, were the immediate result, and the tympanitic state of the abdomen was also obviously increased. After this, small doses of opium were alone given, and she again became more comfortable, and took food with appetite; her pulse fell to about 80, as it had been before the medicine.

On August 5th, Sir Benjamin Brodie met us in consultation; but as the symptoms were not materially increased, and the relations supposed that an operation would probably not be consented to, nothing was yet said to the patient on the subject.

After this time the pulse became weaker, though seldom accelerated; a little bilious fluid was now and then thrown up; she could no longer take much food; and the distension increased so much as to embarrass her breathing, though still without the least threatening of peritonitis. On the 7th, three grains of calomel with half a grain of opium were given every four or five hours, and continued till the 12th, when the gums becoming slightly affected, the opium was given alone.

During this last week, all traces of fæcal substance having long ceased, the end of any instrument introduced into the stricture became covered with thick whitish mucus tinged with blood, and the injections brought away some white flocculent substance with mucus, which gave to each of us, as well as to Sir Benjamin Brodie, who again met us on the 13th, a strong impression, I trust an erroneous one, that it resembled the discharge from a cancerous ulcer.

It now became evident that no further time could be safely allowed for ulceration, or mechanical means, to open the stricture, and therefore the operation was proposed, and readily consented to, for the following day, the thirtieth from the last action of the bowels.

On August 14th, chloroform being administered by Mr. Pollock, I opened the left lumbar colon, Sir Benjamin Brodie, Dr. Seymour, and Mr. Malton giving their assistance. The patient lying a little on her right side, the convexity of the lumbar vertebræ, towards the left side, usual in such cases of lateral distortion, became prominent, and the rotation of the vertebræ accompanying this curve made the transverse processes unnaturally prominent, and consequently the edge of the *quadratus lumborum* became unusually evident, while the long muscles commonly taken as a guide in the operation were wasted, and turned round out of sight, with the spinous processes, towards the right side. It is probable that these alterations of position made the bowel itself approach somewhat nearer to the surface, so as to lessen the difficulty in reaching it, which the unnatural proximity of the ribs to the ilium might otherwise have materially increased beyond what is usual.

A transverse incision fully three inches long, in the usual place, about an inch above the spine of the ilium, readily exposed the bowel, the coats of which, instead of being of the greenish colour sometimes described, were thick and florid, with several large vessels within them. Having passed two ligatures into the coats of the bowel, and fastened them to the integuments above and below, I opened the bowel longitudinally, and consequently at right angles with the incision through the outer parts, for an inch, and slightly divided each lateral margin, upon which a stream of semi-fluid green fæces, having very little fætor, escaped, and soon filled a basin, and in the course of the next six hours, at least two quarts had come away, and the

abdomen had become comparatively soft and flaccid. There was a little trouble from hæmorrhage an hour afterwards, though no bleeding took place during the operation, after which the patient was quiet, though weak, from being unable to take more than a very little fluid nourishment.

During the first three or four days some abdominal pain and tenderness accompanied the continual discharge of fæces, for which opium was required; and on the 16th, two days after the operation, much alarm was excited by a sudden attack of deadly faintness and nausea, in the afternoon, followed by frequent vomiting from midnight till three in the morning. This took place for the same period on the two following nights; it required frequent stimulants in small quantities, and probably arose from the action of the bowels.

On the 21st, however, she was able to sit up for a short time, and the appetite became morbidly keen, after which little of importance occurred. Her strength was gradually restored, till in about six weeks she became stouter and apparently in better health than before her long illness.

In the first two or three months a small quantity of fæces occasionally passed *per anum* for a few days, and then ceased; and in the fifth month a little came away in this manner almost every day, sometimes to the extent of a fourth of the daily evacuation, but the stricture remains nearly in the same state, a tube reaching an obstruction, when passed downwards, about three inches from the wound.

The artificial anus has shown the usual tendency to contraction, to obviate which I have had an ivory plug made of the requisite size and length, having found that one of india-rubber was soon destroyed by the liquids of the bowel, and was not sufficiently firm to resist the contraction of the cicatrix. The plug is attached to a small brass plate, which is enclosed in a larger one of india-rubber, which covers the adjacent parts, and is retained in its place by an elastic bandage, or by plaster. This plug is generally withdrawn for an hour or an hour and a half in the morning, for the escape of the contents of the bowel, after which it is again introduced for the rest of the day; and with it the lady is able to ride and walk out, and enter into society without inconvenience. The propulsive effort being probably less than in the natural situation, a gentle aperient is necessary about once in a fortnight, without which there would be more fulness of the abdomen than is consistent with comfort or safety.

Postscript. Lady — has continued till the present time (July 14, 1852,) in tolerably good health, the evacuations passing only through the wound. On one occasion so much solid fæces had collected, that they required to be broken down mechanically through the wound, in order to check the vomiting and diarrhœa, &c., occasioned by the stoppage.

It is remarkable that the operation of intentionally forming an artificial anus, in cases of irremediable obstruction of the bowel, was not practised by either of the surgeons who proposed the two chief methods of performing it in 1710 and 1796; and the proposals themselves met with so little favour, that when a modification of Callisen's operation was brought forward by Amussat in 1839 and 1841, in his first two Memoirs, his researches only enabled him to find six instances, three in France and three in England, in which the operation had been resorted to, to which number he added five cases of his own.

In 1844 an able writer in the "British and Foreign Medical Review," (vol. xviii.,) added seven other operations, making at that time eighteen cases altogether; and in 1847 Mr. Phillips, in his excellent Paper on Intestinal Obstructions generally, enumerated seventeen cases of artificial anus, including some only of the two former tables, but adding two cases before unpublished.*

Scarcely any year has passed, however, since Amussat's first paper was published, in which the operation has not been performed, especially, I believe, by English surgeons; and four patients are now living, and in good health, in this metropolis, whose lives have doubtless been prolonged by the operation.

It appeared to me, therefore, probable that several important circumstances connected with the operation, hitherto uncertain, might be illustrated by the Tables, which I have formed with some labour,† of forty-four cases of the operation, of eight of which, including my own case, the particulars have not yet been published, and in seven of them have been very kindly furnished me by the operators themselves.‡

* Mr. Phillips indeed ("Med.-Chir. Trans.," vol. xxxi., p. 29,) enumerates nineteen cases; but in one of them the small intestine was opened "apparently unwittingly," and in the other the patient accidentally drove a stake into his abdomen and injured the bowel. (Related with Case 3.)

† The difficulty is greatly increased by the false references and erroneous statements made by preceding writers, which are so numerous and so frequently repeated by others who follow them, that I can scarcely hope my own Tables are altogether free from error regarding the published cases.

‡ Four unpublished cases are added, in an appendix to the Second Table, but are not included in the results. Cases 17, 23, 36, and 40, were read at the "Med. and Chir. Society," Feb. 10, 1852, just before the author's paper was read, the details being published in the present volume.

TABLE I.

Cases in which the Peritonæum was opened.

No. of Case in both Tables.	No. of Case in 1st Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
1	1	M. Pillore. Case given by his son, in Amussat's 1st Memoir, p. 85; L'Experience, Jan. 30, 1840; Gazette Médicale, June 1840.	1776	M. Adult.	Cancer of rectum, 8 or 9 inches in extent; constipation above a month.	Cæcum in right iliac region; oblique incision above Poupart's ligament.	Died, 28 days.	Obstruction in fold of jejunum, from 2lbs. of mercury previously given, a month before the operation,—the bad symptoms beginning nearly 20 days after the operation.
2	2	M. Fine. Odier's Manuel de Med., ed. 2, 1811 (?) p. 275, quoted in Amussat's 1st Memoir, p. 108, from Annales de la Société de Med. de Montpelier, t. vi.	1797, Oct. 12	F. 70, Amussat, p. 109; 63 in British and Foreign Med. Review, 1844, vol. xviii, p. 462.	Cancer of rectum.	Transverse colon, by incision in linea alba, between umbilicus and pubes. M. F. intended to have opened the small intestine.	Recovered. Died Feb. 1, 3½ months.	Dropsy. Very little fæces passed per anum after operation.
3	3	M. Duguesccau. Read by Dr. Dufresse, at l'Académie de Médecine; Med. Times vol. x, 1844, p.	1811	M. Adult-	For the cure of fistulæ in ano, no obstruction being present.	Colon in left iliac region; by Littre's operation.	Recovered.	The artificial anus closed in two years, and then reopened spontaneously, but finally closed in two years more, the fistula being also cured.

TABLE I—(*Continued.*)

No. of Case in both Tables.	No of Case in 1st Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
		446; Malgaigne's Journal de Chir., t. ii, p. 252; Bulletin de la Société de Chirurgie, t. ix, p. 1082.						
4	4	Mr. Freer. London Med. and Physical Journal, vol. xlv, p. 9.	1817	M. 47	Stricture of rectum.	Colon in left iliac region; Littre's operation.	Died, 8 days.	No post-mortem. Evacuations incomplete by wound; much liquid, like putrid blood, per anum, seven days after the operation.
5	5	Mr. Pring. Ibid, p. 1.	1820	F. 64	Stricture of rectum; 12 days' entire constipation.	Colon in left iliac region; Littre's operation.	Recovered. Alive six months afterwards.	No fæces per anum. Apoplectic seizure four months after operation, but recovered from it to a great extent.
6	6	Mr. Martland. Edinb. Med. and Surgl. Journal, v. xxiv, p. 271.	1824	M. 44	Stricture of rectum; 25 days' constipation.	Colon in left iliac region.	Recovered. Living 17 years after.	Fæces occasionally per anum in first two years, but probably none afterwards.
7	7	M. Reybard. Bulletin de l'Académie de Médecine, t. ix, p. 1031, Report by	1833, April 8	M. 28	Cancer of sigmoid flexure of colon.	Three inches of left colon cut out, and the ends sewn together; in left iliac fossa.	Recovered. Died in 12 months, March 16, 1834.	Fæces per anum on 10th day; healed in 38 days. Tumour returned in six months in same place, and finally caused death.

TABLE I—(*Continued.*)

No. of Case in both Tables.	No. of Case in 1st Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
		Blandin, Bcrard, and Jobert; Phillips, in Med.-Chir. Trans., v. xxxi, p. 25.						
8	8	M. Velpeau. Verbal account at the Academy, in Gaz. Médicale, 1839, p. 638, quoted in Amussat's 1st Memoir, p. 161.	1839, Sept.	F. Aged	Stricturc of rectum.	Colon in left iliac fossa. M. Velpeau, it is said, probably tried to open the bowel without wounding the peritonæum, but completed the operation on Littre's plan.	Died, 2 days.	Peritonitis, begun before operation.
9	9	M. Amussat. 2nd Memoir, p. 43.	1840, May 8.	F. 47	Stricture at the junction of the transverse and ascending colon, with bone lodg'd in it; seat of obstruction unknown at time of operation; 33 days constipat'n	Cæcum.	Died, 24 hours.	Peritonitis.
10	10	M. Thierry. L'Ex-	1840	M. 66	Cancer of rectum.	Ascending colon,	Died, 22 hours.	Peritonitis.

TABLE I—(*Continued.*)

No. of Case in both Tables.	No. of Case in 1st Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
		périenee, Oct. 6, 1842, p. 209.				closc to cæcum. M. Thierry intended to open the cæcum without wounding the peritonæum; but the colon, distended with mercury, came in the way, dislodged by the weight.		
11	11	M. Monod. Archiv. Gén. de Méd., 3me serie, t. ii, p. 455, 1838; Phillips, Med.-Chir. Trans., vol. iii, p. 26.	1838, June 5.	F. 25	Stricture of cæcum only admitting a catheter; unknown before death, the apparent disease being a tumour in the right iliac fossa, following a blow a year before, which was found to consist of a scirrhous mass implicating the coats of the bowel.	Ileum; incision 3 in. long in right side of abdomen.	Died within 2 days.	——

TABLE I—(*Continued.*)

No. of Case in both Tables.	No. of Case in 1st Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
12	12	Mr. Luke. Phillips, Med.-Chir. Trans., vol. xxxi, p. 27.	1847	M. 41	Stricture of colon, 8 inches from anus, 5 inches long; completely impervious.	Colon in left iliac fossa.	Died within 24 hours.	Peritonitis. Six inches of serous coat of transverse colon ruptured from distension.
13	13	Mr. Simon (with Dr. Todd). Phillips, Med.-Chir. Trans., vol. xxxi, p. 28.	1847	M. 26	Ileum strangulated by band between mesentery and mesocolon; supposed before operation that the ascending colon was obstructed.	Ileum.	Died, about 12 hours.	Exhausted before operation.
14	14	Mr. Avery. Pathol. Society, 3rd Report, p. 62.	1849	F. 56	Stricture of sigmoid flexure of colon, non-malignant, 14 inches from anus, an inch long, only admitting catheter; supposed to be obstruction of small intestine.	Cæcum opened; incision 6 inches long in right groin. Intestines traced till the stricture was felt in the pelvis; left untouched.	Died, 12 hours.	Collapse, with lymph from peritonitis, though not inflamed at the time of operation.
15	15	Mr. Avery. 4th	1850	M. 55	Obstruction of as-	1st. Descending	Died, 28 hours.	Internal coat of bowel ul-

TABLE I—(*Continued.*)

No. of Case in both Tables.	No. of Case in 1st Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
		Report of Pathological Society, p. 222.			cending colon below the arch, by unnatural twist of colon and cæcum.	colon, external to peritonæum; only scybala found. 2nd. Peritonæum opened in same wound, & another artificial anus established in ascending colon.		cerated and nearly perforated.
16	16	Mr. Luke. Med.-Chir. Trans., v. xxxiv, p. 263.	1850, Dec.23	M. 60	Stricture of sigmoid flexure of colon.	Colon in left iliac fossa.	Recovered. Seen by myself, in good health, Dec., 1851, and continues so, Feb., 1852. [Continues in good health June, 1852, 18 mo.]	Fæces partly passed per anum four days after the operation, and scarcely any now pass through the artificial anus, though it is freely open, having a flat truss to prevent prolapsus.
17	17	Mr. Adams. Unpublished; details communicated by operator, published in this vol. p. 59.	1851, July21	F. 35	Tumour in upper part of rectum, believed to be malignant. [Found, post-mortem, to be hard scirrhus.]	Sigmoid flexure of colon in left iliac fossa.	Recovered, 7 months. In good health February 10, 1852. [Died July 13, 1852. For several months gradually failing, the tumour being more pain-	No fæces have passed per anum, only bloody mucus, which is diminishing. [The opening, up to June, 1852, gave no trouble, and readily allowed the escape of fæces when not obstructed above the opening. The bladder

TABLE I—(*Continued.*)

No. of Case in both Tables.	No. of Case in 1st Table.	Name of Operator, with refereuces to descriptions of cases.	Date of Operation.	Age and Sex.	Disease for which the Operation was performed.	Part of Intestine opened, and mode of Operation.	Result.	Cause of Death, or state of patient after Operation.
							ful, and constipation returned with difficulty in making water.]	was pushed into the right iliac fossa, where it formed a considerable tumour, full of urine. Liver studded with scirrhous tubercles.]

TABLE II.

Cases Operated on without Injury to the Peritonæum.

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
18	1	M. Amussat. 1st Memoir, p. 34, read October 1, 1839, at the Académie Royale de Méd.; 2nd Memoir, p. 32; discussion in	June 2, 1839	F. 48	Cancer of rectum; constipation 26 days.	Descending colon; by transverse incision.	Recovered. Died 5 months afterwards.	No evacuations per anum. Cause of death, peritonitis from cancer.

TABLE II—(*Continued.*)

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
		Gaz. Médicale, 1839, pp. 585—630.						
19	2	M. Amussat. 1st Memoir, p. 52; 2nd ditto, p. 41.	July 14 1839	M. 62	Cancer of rectum; constipation 8 days.	Descending colon; by transverse incision.	Recovered. Alive about 2½ years, Feb. 1842. Med. Gaz., vol. xxx, p. 15; Gaz., des Hôp. 1842.	The Cancer had not made much progress in February 1842, and fæces sometimes passed per anum, after injection.
20	3	M. Amussat. 2nd Memoir, p. 2.	July 3, 1841	F. 50	Cause of obstruction unknown; constipation 40 days.	Right ascending colon; by transverse incision.	Recovered. Seen by Dr. Parrott alive and in good health 8 months after the operation. Med. Gaz., vol. xxx, p. 15.	Injections required to produce evacuations by the wound.
21	4	M. Amussat. 2nd Memoir, p. 24.	Aug. 1841	F. 60	Cancer of rectum; constipation 45 to 50 days.	Right ascending colon; by transverse incision.	Died, 10 days.	Ulceration of the bowel. No peritonitis. Fæces per anum for two days before death, and the finger could pass through the stricture, which was impracticable before operation.
22	5	M. Amussat. M. Vidal, in Gazette des Hôpitaux, March 26th,	Nov. 1841	M. 57	Tumour in left iliac fossa, supposed to be cancer of omentum	Right ascending colon; by transverse incision.	Recovered, 75 days. In Amussat's Memoir. Seen by Dr. Parrott a few	Some fæces per anum. Injections every other day by artificial anus.

TABLE II—(*Continued.*)

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
		1842 ; Gazette Médieale, 1841, p. 588.			or sigmoid flexure of eolon ; eonstipation 33 days.		weeks after the operation ; Med. Gaz., vol. xxx, p. 15.	
23	6	Mr. Clement. Unpublished ; eommunieated by the operator. [See present vol. of Transactions, p. 209.]	Oet. 10, 1841	F. 47	Strieture of transverse eolon, below whieh an immense quantity of plum-stones were lodged.	Right aseending eolon ; by transverse ineision (the first so operated on in Great Britain).	Reeovered. Lived a little more than 3 years. Plum-stones discharged at various periods from the time of an illness arising from them six weeks after operation.	No fæces ; not even flatus per anum, at any time after the operation. Gradual emaeiation. Post-mortem examination did not appear to explain the cause of death.
24	7	Mr. Teale. Provincial Medieal and Surgieal Journal vol. iii, p. 486.	March, 1842	F. 54	Strieture of sigmoid flexure of eolon, 18 inehes from anus.	Left deseending eolon ; by transverse ineision.	Died, 6 days.	Peritonitis. Cæum burst, and fæees eseaped into the pelvis.
25	8	Mr. Jukes. Ibid., vol. iv, p. 330.	May, 1842	F. 30	Cancerous tumour of reetum, 4 in. long.	Left deseending eolon ; by transverse ineision.	Died, 16 days.	Peritonitis. Old chronic adhesions, with some reeent lymph, not more near the wound than elsewhere.
26	9	M. Baudens. Leeture by M. B., in Gazette des Hôpitaux, 1842, pp. 219 & 227.	1842	F. 55	Adhesion of reetum to uterus and vagina, after phlegmonous abseess.	Right aseending eolon ; by *oblique* ineision.	Died, 5 days.	Peritonitis, — begun before the operation.

TABLE II—(*Continued.*)

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
27	10	Mr. Evans. Med.-Chir. Trans., vol. xxviii, p. 95.	1844	M. 23	Stricture at the junction of the ascending and transv'rse colon; not malignant.	Right ascending colon; by transverse incision.	Recovered. Died, 3 months.	Diabetes and peritonitis, from the further progress of the disease.
28	11	M. Malgaigne. Journal de Chir., t. ii, p. 252; Lancet, 1844, vol. ii, p. 34.	1841	M. 57	Cancer of rectum.	Left descending colon; by transverse incision.	Died, 9 days.	Sudden, — while the bowel was reduced, after protruding from the wound. Death attributed to the cancer.
29	12	M. Amussat. Account by M. Amussat in Gaz. Médicale, 1844, p. 508; Medical Times, vol. x, 1844, p. 401, and vol. xi, 1845, p. 528, for the sequel of the case.	June, 1844	F. 53	Annular stricture of colon, and adhesion to uterus.	Left descending colon; by transverse incision.	Recovered. Died, November 1844, 6 months and 10 days.	From the progress of the disease. Some fæces passed per anum; but latterly the passage was obstructed, and peritonitis took place from this cause.
30	13	M. Baudelocque. Retrospect by Mr. Teale in the Trans. of Prov. Med. Associa. vol. xiv, p. 119,	1845	—	I have been unable to procure the volume of the Encyclopédic to which refercnce is	—	—	—

TABLE II—(*Continued.*)

No. of Case in both Tables.	No. of Case in 2nd Tabel.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
		quoted as from En. des Sciences Med., Feb. 1845.			made; and I suspect the case may be that of imperforate rectum in an infant but I have not thought it right to erase it from the list.			
31	14	M. Didot. Gazette Médicale, 1848, p. 235.	1846.	M. 65	Cancer of rectum.	Left descending colon; by transverse incision.	Recovered, living 2 months.	Two months after operation in good health, and at his usual employment (October 29th to end of December), but the cancer making progress.
32	15	Mr. Field. Med.-Chir. Trans., vol. xxxiii, p. 45.	1846	M. 33	Stricture of sigmoid flexure, 8 in. up, 4 in. long; blocked up by plug of lymph.	Left descending colon; by transverse incision.	Recovered, Died 1 year and 9 months.	Fæces, by artificial anus; obstructed every two or three months, till the wound was dilated. Ascites: tapped. Chronic peritonitis, and adhesions.
33	16	Mr. Clarkson. Ibid., p. 57.	1846	F. 21	Stricture of upper part of rectum, cartilaginous, 6 in. up; canal	Left descending colon; by transverse incision.	Recovered. Died, 1 year and 2 months.	Obstruction of artificial anus; occasioning chronic peritonitis and universal adhesions, with ulceration

TABLE II—(*Continued.*)

No. of Case in both Tables.	No of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
					obliterated for an inch.			of bowel, — the most healthy part being some inches above and below the stricture.
34	17	Mr. Crompton. Medical Gazette new series, vol. ix, p. 107.	1846	M. 36	Cord-like stricture of colon, 11 in. from anus and 10 in. from artificial anus.	Left descending colon; by transverse incision.	Died, 5 hours.	Sudden prostration from peritonitis just before the operation, of which the patient was scarcely conscious.
35	18	Professor Bush. Dub. Med. Press., vol. xxiii, p. 230, quoted verbatim from the Ameri- Journal of Med. Science, vol. xix. p. 274.	Dec. 1847	F. 30	Cancerous stricture of sigmoid flexure of colon.	Left descending colon; by transverse incision.	Died, 14 days; unfavourable symptoms beginning on the 8th day.	Peritonitis from the cancer.
36	19	Mr. Clement. Unpublished; communicated by the operator. [See present vol. of Trans., p. 218.]	June 21, 1847	M. 43	Cancerous growth entirely filling the rectum, and pressing on the bladder.	Left descending colon; by transverse incision.	Died, 35 days, much relieved.	No post-mortem examination. Morbid growth increased. Sloughing over sacrum, &c. was the chief cause of death.
37	20	M. Maissonneuve. Bulletin de la Société de	1847 (?)	M. 33	Cancer of rectum.	Left descending colon; by transverse incision.	Recovered. Died, 2 months.	Of phthisis. Rectum quite obliterated by the disease.

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
		Chirurg., t. i. p. 292. (Read July 18, 1849.)						
38	21	Mr. Hilton. Unpublished; communicated by the operator.	Jan., 1849	M. 23	Cancer of upper part of rectum.	Left descending colon; by Callisen's incision, parallel with edge of quadratus.	Died, 17 days.	Worn out by long-continued previous disease.
39	22	Mr. Pennell. Med.-Chir. Trans., vol. xxxiii, p. 255.	Nov., 1849	M. 50	Stricture of sigmoid flexure of colon, with stricture of urethra; fæces and air passing by bladder and urethra, in which pieces of bone, &c., were often caught.	Left descending colon; by Callisen's perpendicular incision.	Recovered. Living October, 1851, as I am informed by Mr. B. Phillips, in better health. [See supplemental note at end of this vol.]	Urine passed per anum, and by the artificial anus, in the first fortnight.
40	23	Mr. A. Baker. Unpublished; communicated by the operator. [See present vol. of Trans., p. 227.]	Jan. 23 1850	F. 62	Cancerous stricture of rectum, just felt by the finger. [Post-mortem: Narrow dense band, which completely occluded	Left descending colon; by Amussat's transverse incision.	Recovered. Alive Feb, 1852, but the health beginning to fail, with tumour felt in abdomen. [This patient died on the 11th Feb., the	Some fæcal matter occasionally, per anum, in the first month, but only by the artificial anus since,—always free. [Post-mortem. Cerebriform and colloid cancer of both ovaries. Repeated peritonitis, with adhesions.]

TABLE II—(*Continued.*)

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
					the canal; not examined minutely.]		day after Mr. Baker's paper was read, and before the present paper was read. Mr. Baker has since favoured me with this information.]	
41	24	Mr. Gay. 5th Report of Pathological Society, p. 108.	1851	F. 52	Adhesion of rectum to scirrhous uterus, obstructing bougie, and adhesion of ileum to uterus, intercepting the passage of fæces.	Left descending colon; by Amussat's transverse incision.	Died in less than 12 hours. Only scybala found in colon.	The obstacle to the passage of fæces necessarily unrelieved by the operation.
42	25	Mr. Hilton. Unpublished; communicated by the operator.	April, 1851	F. 42	Stricture of left colon, not malignant; constipation 40 days.	Left descending colon; by Callisen's incision parallel with edge of quadratus.	Recovered, 10 months. Alive Feb. 1852, in good health, [and in June 1852, still in good health.]	No fæces per anum since the operation.
43	26	Mr. Paget. Unpublished; communicated by the operator.	July, 1851	F. 67	Annular carcinoma of rectum, about 5 inches from anus; con-	Left descending colon; by Callisen's vertical incision from the end of	Died, 36 hours. Great relief for 30 hours, from abundant fæcal	Sinking before the operation. Slight peritonitis, especially near the opening into the colon.

TABLE II.—(*Continued.*)

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
					stipation 9 or 11 days.	the last rib to the crest of the ileum.	discharge ; then rapid sinking.	
44	27	The Author.	Aug.14 1851	F. 44	Stricture of sigmoid flexure ; bougie obstructed about 10 in. from anus ; 30 days' complete obstruction.	Left descending colon ; by Amussat's transverse incision.	Recovered, 6 months. Alive and in good health Feb. 1852. [Well in Aug. 1852. one year after operation.]	Very little fæces per anum in the first four months,—a little more in the fifth month,—scarcely any afterwards,—except by wound.

APPENDIX.

45	28	Mr. Teale. Unpublished; communicated by the operator, July 12, 1852.	Feb.11 1848.	F. 57	Stricture of the lower part of the sigmoid flexure of colon, ascertained by the introduction of the hand into the rectum ; obstruct'n 15 days.	Left descending colon ; by transverse incision.	Died in 20 hours, unrelieved by operation.	No post-mortem allowed.
46	29	Dr. Keyworth. Unpublished; communicated by the operator, July 13, 1852.	May25 1848,	M. 53	Narrow circular stricture in the middle of the descending part of the arch of the colon; no proper	Right ascending colon ; by perpendicular incision, and transverse incision prolonged forward from its	Died in 26 hours, much relieved by escape of great quantity of fæces and gas.	Post-mortem. Several red patches in the intestines, and in three or four places the peritoneal coat of the great intestine was ruptured by distension. There

No. of Case in both Tables.	No. of Case in 2nd Table.	Name of Operator, with references to descriptions of cases.	Date of Operation.	Age and Sex.	Ascertained or supposed Cause of Obstruction.	Situation of the Artificial Anus, and mode of incision.	Result.	Cause of Death, or state of patient after Operation.
					evaeuation for a month.	centre. The psoas parvus got in the way and the layers of the meso-eolon required separation.		was no effusion into the peritonæum.
47	30	Mr. Phillips. Unpublished; communicated by the operator, April 29, 1852; related also by Mr. Holthouse, at the Pathol. Soeiety.	June 20, 1850, in the Westminster Hospital.	F. 46	Fibrous tumours of uterus pressing the rectum against the saerum, and obstrueting the passage of urethral bougie; some softening and uleeration of reetum; constipat'n 10 days.	Left deseending eolon; by ⊥ shaped incision. The small intestine adhered to and discharged into the colon, in the situation of the wound.	Died, 18 days. Relieved at first.	A small quantity of liquid fæces passed per anum, and different kinds of matter from the small and great intestine by the wound. Sloughing of wound was the eause of death.
48	31	Mr. Curling. Unpublished; eommunieated by the operator.	Feb. 26 1852, two days after this paper was read.	M. 38	Ulceration of rectum into the bladder (as in 39), water passing per anum and fæces per urethram; partial obstruetion 9 days.	Left descending colon; by Amussat's transverse ineision	Recovered. No fæees at first, but a gallon in 8 hours. Alive 3 months afterwards. [Died July 14, nearly 5 months after the operation.]	Weak and emaciated when he left town. May 28, 1852. (having a pint of slimy purulent discharge daily in Mareh). Some fæces per anum eight or ten days before; some fæces, on one or two oecasions, by urethra —generally all by wound.

Of these 44 cases of artificial anus, it is known that—

6	died within	the first 24 hours,	(9, 12, 13, 14, 34, 41.)
11	,,	48 hours .	(8, 10, 11, 15, 43.)
13	,,	1 week . .	(24, 26.)
17	,,	a fortnight .	(4, 21, 28, 35.)
19	,,	3 weeks .	(25, 38.)
21	,,	5 weeks .	(1, 36.)

So that only 23 patients can be considered as having recovered from the operation ; but as the operation in one case (3) was performed for the cure of fistulæ in ano, in which, therefore, the dangers of protracted constipation were absent, it will be more fair to state that there were 21 deaths and 22 recoveries.* But let us trace the 22 recoveries a little further ; first we find that 5 died within six months, viz. :

1 in 2 months . .	(37.)
1 in 3 months . .	(27.)
1 in 3½ months . .	(2.)
1 in 5 months . .	(18.)
1 in 6 months and 10 days	(29.)

Eight are either alive or are left uncertain under a year, viz. :

1	reported for	2 months,	cancer making progress?	(31)	—Didot.
1	,,	2½ months,	cancer of omentum or colon	(22)	—Amussat.
1	,,	6 months.	Operation 1820	(5)	—Pring.
1	,,	8 months	,, 1841	(20)	—Amussat.
1	,,	uncertain	,, 1845	(30)	—Baudelocque.
1	alive at present,	6 months.	Operation Aug. 14, 1851	(44)	—Hawkins.
1	,,	7 months	,, July 21 ,,	(17)	—Adams.
1	,,	10 months	,, April ,,	(42)	—Hilton.

And therefore only 9 survived for about one year or upwards, of whom,—

1	died in rather less than a year	(7)	—Reybaud.
1	,, in 14 months . .	(33)	—Clarkson.
1	,, in 21 months . .	(32)	—Field.
1	,, at the end of 3 years .	(23)	—Clement.
1	was alive nearly 3 years, in 1842	(19)	—Amussat.
1	is now alive, 14 months .	(16)	—Luke.
2	are now alive, about 2 years	(39)	—Pennell, (40)—Baker.
1	lived for 17 years . .	(6)	—Martland.

* The deaths and recoveries would be exactly equal if I could include in my Tables a case in which a surgeon in this country wounded the peritonæum, and opened the lumbar colon *below* the seat of obstruction ; but my informant does not feel at liberty to communicate to me the name of the operator ; nor was there any examination after death, to explain the nature of the obstructing cause.

I must confess that I was not prepared, when I commenced this analysis of all the known cases of this operation, to find that only half the patients survived its performance; still less, perhaps, to ascertain that of those who did recover, so few received more than a brief prolongation of their lives, that only nine lived as much as one year, and that only one patient has hitherto lived beyond three years after the operation; and it became an interesting question to ascertain what were the circumstances which chiefly affected the success of the operation, so as to estimate the chances of life for the six patients who are known to be at this present time alive,* and determine how far it is hereafter to be looked on with favour as an established surgical operation.

1. Of 43 patients whose *sex* is recorded, 22 were females and 21 males; and of the 21 early deaths, 11 were females and 10 males; so that neither the frequency of the diseases for which the operation is required, nor the result of the operations, is influenced by the sex.

2. The *age* of 43 patients varied from 21 to 67 or 70, and it was,—

Between	20	and	30	years in	8	cases, of whom	5 died.
,,	30	,,	40	,,	4	,,	1 ,,
,,	40	,,	50	,,	11	,,	4 ,,
,,	50	,,	60	,,	10	,,	7 ,,
,,	60	,,	70	,,	7	,,	2 ,,
reported as adult				in	2	,,	1 ,,
,,	aged			,,	1	case, which died.	

Exactly half the cases whose age is recorded were, therefore, from 40 to 60 years old.

Of 8 cases, not exceeding 30, 5 died within 5 weeks, and none lived longer than 14 months; of 7 cases, above 60 years of age, 5 recovered and only 2 died,—and of the 5 recoveries, 1 is now living, two years since the operation (40),† and another was reported as alive nearly 3 years after the operation (19); so that, at first sight, the advantage seems to be largely in favour of those advanced in life.

But if we examine a little further, we find that of 11 cases from 40 to 50, there were 7 recoveries to 4 deaths; while of the 10 cases from 50 to 60, there were only 3 recoveries, and not less than 7 deaths, in the first few days.

And if we take a further point of comparison, it is found that of 12 cases below 40 years of age, 6 died and 6 recovered; and of 17 cases above 50 years of age, 9 died and 8 recovered.

* Of these six patients, one (40) died February 11th, a few days before my Paper was read, two years and one month after the operation, and another (17) died July 13th, 1852, about one year after the operation.

† See the previous note of his death.

It would appear, therefore, on the whole, that age exerts less influence than might at first be anticipated, but that at least the age of 60 and upwards is no obstacle to success, since it has, so far, been more successful in the aged than in the young.

3. It might reasonably be expected that the *nature of the disease* for which the artificial anus is made would much affect the success of the operation. These diseases were,—

In 15 cases, stricture of rectum and sigmoid flexure of colon, believed to be not cancerous, (4, 5, 6, 8, 12, 14, 16, 24, 29, 32, 33, 34, 39, 42, 44.)
„ 3 „ stricture of ascending or transverse colon, also believed to be non-malignant, (9, 23, 27.)
„ 1 case, twist of colon at upper part of ascending colon, (15.)
„ 1 „ adhesion of rectum to uterus from inflammation, (26.)
„ 1 „ strangulation of ilcum by a band, (13.)
„ 1 „ fistulæ in ano, (3.)
„ 1 „ adhesion of ileum and rectum to cancerous uterus, (41.)
„ 17 cases, cancer of rectum and sigmoid flexure of colon, (1, 2, 7, 10, 17, 18, 19, 21, 25, 28, 31, 35, 36, 37, 38, 40, 43.)
„ 1 case, cancer of sigmoid flexure of colon, or of omentum, (22.)
„ 1 „ stricture of cæcum, with scirrhus of its coats from injury, (11.)
„ 2 cases, unknown, (20, 30.)

44

It thus appears that of 42 operations in which the nature of the disease was known, 19 were cancerous, *i.e.*, 45 per cent. Again, of the 21 cases which did not recover from the operation, 10 were cancerous, or above 47 per cent. It follows, therefore, that the operations for cancerous diseases were, to a certain degree, but not much, more fatal in the first five weeks.

We might have anticipated, *à priori*, that few who were operated on for cancer would have lived long after their recovery from the operation; and yet of the nine patients who alone lived for a year, three were cancerous; one of them, Mr. Baker's (40), is yet alive,* and another, M. Amussat's (19), was still alive about three years after the operation.

The little influence which cancer thus shows in increasing the mortality, may possibly arise from this circumstance, which I think I have observed, namely, that the more rapidly fatal cases of cancer of the intestinal canal are of the softer kind, in which obstruction is less likely to take place; and that the disease of the inner surface, frequently epithelial cancer, so often seen in the rectum, is less injurious to the general system, than the softer carcinomatous coats of the intestinal canal.

Last month, on January 12th, I met Mr. Chilver in the case of a lady whom I had frequently seen with him during the last three years, believing

* See preceding note of his death.

the disease to be cancerous when I first saw her. For some time before the six days' obstruction, for the relief of which I was now called, numerous abscesses and sinuses had formed, and the whole of the fæces had been for some weeks discharged by a large ulceration into the vagina. With some difficulty I broke through the obliterated anus, and nearly five inches of the rectum, filled with morbid growth, and some portion beyond the reach of the finger, through which I could not force a bougie, gave way four hours afterwards, so as to empty the distended bowel. Notwithstanding this extensive disease, of more than three years' duration, the health of this lady is at present perfectly unaffected, and the bowels have since continued more amenable to medicine than before I employed this violence to the new growths.

It appears, therefore, from the Table that an artificial anus, if required for cancer in the rectum or sigmoid flexure, affords nearly, though not quite, as much chance of immediate success, and of subsequent prolongation of life, as when performed for all other obstructions not malignant.

It would be highly desirable to separate the diseases of the *rectum* from those of the *sigmoid flexure* of the colon, and to determine the relative frequency of simple stricture, and of cancerous stricture in the latter situation; but the terms upper part of the rectum, and lower part of the sigmoid flexure, are employed indefinitely by different operators for the space of from five to fourteen inches from the anus. Of the whole rectum and sigmoid flexure together, the Tables give the nearly equal number of 17 cancerous and 15 non-malignant obstructions, and 1 case in which Amussat doubted whether a tumour was cancer of the sigmoid flexure or of the omentum. I have heard a strong opinion given by experienced surgeons of the frequency of cancerous stricture in the sigmoid flexure, properly so called; but I venture to state my own opinion as decidedly contrary to this, from what I have seen in post-mortem examinations and in living patients; obstruction of the first five or six inches from the anus have, according to my observation, been most frequently cancerous, or contracted cicatrices of ulcers, but almost all strictures above this height, which could fairly be said to be in the sigmoid flexure, so as to be scarcely, if at all, felt by the finger, have been firm, hard thickenings of all the coats of the bowel, generally of an annular shape, without evidence of carcinoma, even when more than one generation has been affected, as I have seen in three instances.

4. Let us next examine the *causes of death*, and the state of those alive at the last report.

(A.) Of the 21 cases which did not recover from the operation, the *assigned causes of death* were:

In 1 case, 2 lbs. of mercury, given previously, dragging the ileum into the pelvis, (1, cancer—died in 28 days.)

In 1 ease, unrelieved, the obstruetion being above the opening, (41, died in 12 hours.)
„ 1 „ fæeal evacuations ineomplete, (4, died in 8 days.)
„ 5 „ exhausted by the disease, (13, died in 12 hours; 14, died in 12 hours; 43, died in 36 hours—cancer; 28, died in 9 days —eaneer; 38, died in 17 days—caneer.)
„ 4 „ struetural ehanges produced by the disease, viz.
a. Cæeum burst, and fæees escaped into pelvis, (24, died in 6 days.)
b. Ulceration of bowel, (15, died in 28 hours; 21, died in 10 days— eaneer.)
c. Rupture of 6 inches of peritoneal eoat from distention, (12, died in 24 hours.)
In 7 eases, Peritonitis.
a. Old as well as recent, (25, died in 16 days—eaneer.)
b. From the operation, (9, died in 24 hours; 10, died in 28 hours.)
c. Begun before the operation, (34, died in 5 hours; 8, died in 2 days; 26, died in 5 days.)
d. From the eancerous uleer, (35, died in 14 days.)
In 1 ease, unknown, but eaneerous, (11, died in 2 days.)
„ 1 „ chiefly sloughing of saerum, (36, died in 35 days.)

(B.) The deaths of 9 patients, who reeovered from the operation, have been reeorded; of which—

4 eases were eaneerous, (37, died in 2 months of phthisis; 2, died in 3½ months of the disease and dropsy; 18, died in 5 months of the disease; 7, died in 1 year of the disease.)
5 eases were strieture of colon or reetum not eaneerous, (27, died in 3 months; 29, died in 6 months; 33, died in 14 months; 32, died in 21 months, all four of the disease; 23, died in three years, probably of the disease.)

(C.) There are now living, or were alive at last report, 13 eases, of whieh—

4 eases were eaneerous, (31, 2 months—eancer making progress; 22, 2½ months—in good health; 40, 2 years—still alive;* 19, 3 years nearly —eaneer not making mueh progress.)
7 eases were stricture of eolon or rectum, not eaneerous, (44, 6 months —in good health; 5, 6 months—apoplexy 4 months after operation; 17, 7 months—in good health;† 42, 10 months—in good health; 16, 1 year—in good health; 39, 2 years; 6, 17 years.)
2 eases, disease unknown, (20, 8 months—in good health; 30, time and state uneertain.)

Thus, of 21 eases operated on unsuceessfully, there are only two (9, 10,) in whieh peritonitis is said to have followed the operation without having been exeited by the previous disease, and there is scareely one in whieh the death

* See preceding note of his death.
† Died July 13, 1852, just a year after the operation.

of the patient is directly assigned to the operation; and I am inclined to think that the histories of the cases fairly justify the operators in attributing the fatal result to the previous effects of the disease itself on the constitution of the patients, or to the physical changes in the bowel. Hence we derive a strong argument for as early a performance of the operation, as will be warranted by the immediate danger to life, either from the disease or from the operation, and by a fair estimate of the probable condition of the patient after recovery.

In September, 1850, I met Dr. Todd and Mr. R. J. Pollock, of Kensington, in consultation on the case of a gentleman, 76 years of age, who had suffered from dysentery in a tropical climate, which had probably produced contraction of the colon below the liver. At our second meeting, about the eleventh day of the obstruction, it was agreed that I should offer to open the right lumbar colon, which the patient declined. On the following day, I am informed by Mr. Pollock, acute pain came on suddenly on the right side of the abdomen, while it was being examined by the hand, followed by sudden prostration. There was no examination; but it is most probable that ulceration had taken place with fatal rupture and fæcal effusion, and that the refusal of the patient prevented my adding this case to the list of unsuccessful operations, in consequence of the organic changes of the bowel produced by the disease.

But as the case in which I operated (44) was successful after thirty days' obstruction, and the Tables show similar success even after forty, and from forty-five to fifty days' constipation, (20, 21, 42,) while other patients have died, on whom the operation was performed, as early as the ninth or tenth day, (12, 43,) it is reasonable to infer that the length of time during which the *final* obstruction has existed, is not so much to be taken as a criterion of danger from delay, as the frequency and urgency of *previous* attacks, and the severity of the existing symptoms; a single collection of fæces, as in my own case, being far less likely to produce fatal mischief to the textures of the bowel, than repeated attacks of less complete obstruction.

Yet the surgeon is precluded from operating till as much time has been granted to the efforts of nature, as the symptoms in each case will warrant; because he is met by the fact, that of the 9 patients who recovered, and whose subsequent history is given to us, at least 7, and probably 8, died of the further progress of the complaint for which the operation was performed; 1 having died of phthisis.

Let not any one, however, from this apparently unsatisfactory result of the operation, immediate or remote, infer that it should be abandoned; for the Tables show most clearly that the 22 patients who recovered were saved, for various periods, solely by the operation, since Mr. Luke's case (16) is the only one in which the contents of the bowels have, for the most part,

again passed naturally; even in Mr. Martland's case (6), which survived 17 years, no fæces whatever passed *per anum* after the first two years; in Mr. Clement's case, not even flatus passed *per anum* during the three years that the patient lived; and, in most cases, some difficulty has been experienced in procuring a free discharge from the artificial anus; and the reason why the further progress of the disease was so soon fatal, when the stricture was not cancerous, is obviously because the artificial anus was insufficient, dilatation and incision having been required in several of the cases, (e. g. 27, 32, 33.)

5. The next points deserving attention are the *situation* in which the *bowel was opened*, and the *mode* in which the artificial anus was made.

(A.) *Table of Operations through the Peritonæum. Total* 17 *cases.*

In cæcum, 3 cases, (14, died in 12 hours; 9, died in 24 hours; 1, died in 28 days.)
„ small intestine, 2 cases, (13, died in 12 hours; 11, died within 2 days.)
„ right colon, 1 case, (10, died in 24 hours.)
„ transverse colon, 1 case, (2, died in 3½ months.)
„ left colon, 9 cases, (12, died in 12 hours; 8, died in 48 hours; 4, died in 8 days; 17, alive now, 7 months;* 5, lived above 6 months; 7, died in 1 year; 16, alive now, 13 months; 3, alive above 4 years; 6, lived 17 years.)
„ both right and left colon, left external to, and right through the peritonæum, 1 case, (15, died in 28 hours.)

Total, 10 died—7 recovered.

M. Thiery (10) intended to have opened the cæcum behind the peritonæum in the right iliac fossa, but the colon, distended with mercury, came in his way; and in a discussion at the Academy of Medicine it was said that M. Velpeau (8) attempted to open the sigmoid flexure in the left iliac fossa without injuring the peritonæum, but failing to effect this, the operation was completed according to Littré's method. In one case (2) in which the transverse colon was opened, an incision was made between the umbilicus and pubes, with the intention of opening the small intestine. In one case (7) three inches of the sigmoid flexure were actually removed. In another (15) Amussat's operation was first performed on the left side, but the left colon being found empty, the peritonæum was opened, and a second artificial anus established in the right colon through the same wound. In the other cases the usual incision was made in the right or left inguinal regions.

(B.) *Table of Operations External to the Peritonæum. Total* 27 *cases.*

In right colon, 6 cases, (26, died in 5 days; 21, died in 10 days; 22, alive 2½ months; 27, died in 3 months; 20, alive 8 months; 23, died in 3 years.)

* See preceding note of his death.

In left colon, 20 cases, (34, died in 5 hours; 41, died in 12 hours; 43, died in 36 hours; 24, died in 6 days; 28, died in 9 days; 35, died in 14 days; 25, died in 16 days; 38, died in 17 days; 36, died in 35 days. *Total* 9, in 5 weeks.——37, died in 2 months; 31, alive 2 months—cancer; 18, died in 5 months; 44, alive now, 6 months; 29, died in 6 months; 42, alive now, 8 months; 33, died in 14 months; 32, died in 21 months; 39, alive now, 2 years; 40;* 19, alive nearly 3 years *Total* 11, lived above 5 weeks.)

Uncertain which side, 1 case, (30, recovered.)

Thus, of both sides there died, within 5 weeks, 11; recovered 16 = 27.
Of right colon, died 2; recovered 4 = 6.
,, left colon ,, 9 ,, 11 = 20.

In the performance of these lumbar operations the incision was made in 4 instances by Callisen's perpendicular incision on the outer border of the *quadratus lumborum*, of which 2 died (43, 38), and 2 recovered, (39, 42); 1, which was fatal, was performed by means of an oblique incision from above downwards and outwards (26); in 21 other cases Amussat's transverse incision was chosen, of which 8 died early;—it is the method which appears to me to be the least likely to lead to difficulty in finding the colon, but the success is not otherwise influenced by the preference.

The two patients in whom the *small intestine* was opened, (11, 13,) and three in whom the *cæcum* was opened, (1, 9, 14,) died at an early period;—that in which the *transverse colon* was opened (2) lived for three months and a half. In all six the peritonæum was opened.

Of 17 cases in which the artificial anus was made through the peritonæum, 10 died and 7 recovered from the operation; of 27 operations behind the peritonæum, 11 died within five weeks, and 16 recovered; but this comparison, at first sight favourable to the lumbar operation, contains many sources of error; and as the question is one of great importance, it requires further examination.

In the first place, of the operations through the peritonæum the fistula case of Duguesseau (3) should be excluded, as being free from the dangers of detained fæces. Both the operations on the small intestine (11, 13,) admit of no operation external to the peritonæum, and should therefore be omitted. Mr. Avery's case of artificial anus in the right colon through a wound in the left lumbar region (15) must be omitted, as too complicated to be again met with; and the artificial anus in the transverse colon (2) must also be left out, as it was made unintentionally, and no surgeon is likely to adopt an operation on this part by choice; but the three cases of operation on the cæcum (1, 9, 14) must be retained in the list, because an abdominal incision on the right side would often oblige the operator to open this

* See preceding note of his death.

portion of the canal, although he might have intended to open the colon a little higher up. Again, of the 27 cases of operation behind the peritonæum, Mr. Gay's (41) must also be omitted at present, though it will require notice in reference to diagnosis, as the real obstruction was found to be in the ileum, and could not, therefore, have been relieved, if its nature had been known, by the lumbar operation.

There then remain only 12 cases of peritoneal section to compare with 26 cases of operation behind this membrane ; and it is found that of the former 7 died and 5 recovered, while of the latter only 10 died and 16 recovered ; the recoveries being, therefore, as 41 per cent. where the peritonæum is opened, to 61 per cent. where this membrane is uninjured.*

The *right* colon and cæcum were opened through the peritonæum in 4 cases, all of which died, (1, 9, 10, 14 ;) and an artificial anus was made in the *right* colon behind the peritonæum in 6 cases, of which 2 died, (21, 26,) and 4 recovered, (20, 22, 23, 27 ;) and, of the latter, 1 case, (Mr. Clement's, 23,) lived for as long a period as three years. As far as these numbers go, the preference on the right side is unquestionably due to the lumbar operation. This operation on the right side, though it happens not to have been performed since 1844, will also fully bear comparison with that on the left colon, as to immediate and ultimate success, although so much higher in the intestinal canal.

The *left colon* has been opened through the peritonæum in 8 cases, (exclusive of the fistula case, 3,) of which there died 3, (4, 8, 12,) and 5 recovered, including Reybaud's case of excision of the diseased part, (5, 6, 7, 16, 17 ;) and of 20 cases of lumbar operation on the *left colon*, 9 died, (24, 25, 28, 34, 35, 36, 38, 41, 43,) and 11 recovered, (18, 19, 29, 31, 32, 33, 37, 39, 40, 42, 44 ;) the deaths in the abdominal section being 37½ per cent., and in the lumbar operation 45 per cent.

While, then, a comparison of the whole number of operations, and also of those on the right side alone, is in favour of the operation external to the peritonæum, the comparison of the two methods of procedure on the left side is favourable to the peritoneal section, so far as so small a number, as 8 cases of the one compared with 20 of the other method, can be considered of value. The inequality of the numbers appears to me, however, to leave the question as to the descending colon still undecided ; and that each operator, weighing the advantages and disadvantages of an artificial anus in front of the abdomen and of one in the lumbar region, is, as yet, fairly justified in selecting whichever situation he thinks best, on the left side of the body.

My own opinion is that the advantages of the abdominal artificial anus

* One of these latter cases (37) died, however, in two months, of phthisis ; and the ti which another (30) survived the period of alleged recovery is not stated in the Tables.

over that in the loins have been sometimes overrated, and the dangers of peritonitis undervalued. The only cases in which the death of the patient is exclusively attributed to peritonitis from the operation, were cases of abdominal section (9 and 10); and in another case of the same operation (14), it is expressly stated that no lymph was found at the time of the operation, but that, although the patient died in twelve hours, some lymph had been formed in that space of time. When peritonitis has been found after the lumbar operation, it has been remarked (25) that it was not greater near the wound than elsewhere, or else that it had begun before the operation; indeed, in one case, (34), the collapse from peritonitis already existed to such an extent that the patient was scarcely sensible of the operation, and died in five hours.

Supposing that the danger of the operation was not materially greater in the abdominal section, (which I think it is,) there are two reasons which might make it the most eligible on the left side, though not on the right. The first is the difficulty, and the consequent danger to the patient, which the Tables clearly show, in preserving a free passage through the artificial anus, and which is very probably somewhat greater in the firm texture of the loins, especially in a stout person, than in the softer parietes in front of the abdomen.

I think it not improbable, from my own case, that surgeons may not have sufficiently attended to the very different propulsive power possessed naturally by the rectum, and by any other part of the great intestine, making it almost impossible that actually hard and solid fæces should be expelled through the wound, unless broken down, as I was obliged to do for the lady on whom I operated, on the only occasion, perhaps, in which the evacuation was more solid than a pultaceous mass.

The second reason is that which had been particularly mentioned by Mr. Luke,* namely, the power which the surgeon thus obtains of extending his search, if his diagnosis of the seat of obstruction has proved incorrect, a point which next demands attention.

6. *Errors of diagnosis* are the last subject which I will endeavour to follow out from the Table before us; and they may be of three kinds:—the exact situation of the stricture in the great intestine may be mistaken; or it may be supposed to be in the colon or rectum, when it in reality exists in the small intestine,—in either case an opening formed below the obstruction necessarily leaves the patient unrelieved; or, thirdly, the presence or supposed existence of a hernia may mislead the surgeon, and induce him to overlook the actual cause of obstruction.

1, *a*. Were it proved that it was difficult to detect the precise situation

* *Med.-Chir. Trans.*, vol. xxxiv., p. 276.

of an obstruction in the great intestine, it would certainly be right to adopt M. Baudens' rule of always opening the right colon; and the preceding remarks have shown that it may be done with as much success as in a lower part of the bowel, if six cases are considered to determine such a question; certainly, however, it is often quite easy to ascertain the point. In the rectum itself an obstruction is easily felt or seen; nor is it unfrequently so detected in the lower part of the sigmoid flexure.

In September, 1845, I went from town to meet Mr. Thomson of Westerham, in the case of a gentleman, 65 years of age, whose father had died of stricture of the rectum, and who, after increasing constipation for six months, was suffering from obstruction of three weeks' duration; the finger pushed very high up, could just detect a circular hardness of the bowel, projecting into a healthy and capacious rectum, and having some fæces in the centre, of which a small portion continued to come down, though the abdomen was greatly distended with air. Dilatation was attempted; and on his death, a week afterwards, a very narrow circular stricture was found high up in the rectum, just where the finger distinguished it during life.

b. In the upper part of the sigmoid flexure, as in my own case, the diagnosis is somewhat more difficult than in the two former situations, from the bougie being occasionally obstructed in its passage through this part of even a healthy bowel; but out of 30 cases in which the left colon was opened, there is only one in which the obstruction was in a higher part of the great bowel than that selected for the operation. In this instance (15) the obstruction was believed, from the appearance of the abdomen, to be situated below the descending colon, but on opening this part in the left loin, it was found flaccid; the peritonæum was then opened in the same wound, and a distended bowel, supposed to be the transverse colon, was opened. The patient died twenty-eight hours afterwards; and Mr. Avery, who operated, found that the ascending colon had been twisted on itself, after being obstructed by the mesentery, so as to turn the right colon and cæcum into the left side of the abdomen, and make the error of diagnosis perfectly excusable. In this case, then, had the wound been made in the right loin, neither colon nor cæcum would have been found, and an abdominal section would have probably been not more successful than this double artificial anus in one wound on the left side.

c. Stricture in the *transverse colon*, or near its junction with the ascending or descending portions, is doubtless the most difficult of diagnosis, but it is sometimes capable of being ascertained with tolerable certainty; sufficient at least to show that the opening must be made on the right side, and not on the left: fortunately it is rare, for the Tables only give three cases of stricture in this part of the bowel, (9, 23, 27). I have already mentioned one case in which I offered to open the right colon, but there was no post-mortem examination.

In December, 1851, I met Mr. Langley in consultation on the case of a lady, about 70 years of age, in whom an obstruction had existed for nine days. It seemed quite clear to me that this did not arise from a tumour of the uterus, which Mr. Langley had detected, as the finger could readily displace the uterus and pass beyond it; the tube would pass without difficulty for eighteen inches, and large injections could be borne, and there was no sign of fulness of the left colon, while the whole abdomen was greatly distended. As the vomiting had ceased for some hours, after having been very troublesome for two days, and a good deal of fæcal substance was coming away with enemata, there seemed no reason for proposing immediate operation, which was spoken of as possibly necessary on the *right* side, if the stricture did not yield further. I did not see her a second time, however and another surgeon, called in by the friends, discountenanced an operation during the thirteen following days, in which I am informed by Mr. Langley she slowly declined, without signs of peritonitis. The stricture was found to be of a simple character, in a part of the transverse colon, without any disease elsewhere, except a fibrous tumour of the uterus, which was quite moveable, so that this was not an unfavourable case for operation, as the patient's health was very good.

Of the cases in the Tables, it appears that Mr. Clement detected a stricture in the transverse colon (23), and Mr. Evans one at the junction of the ascending and transverse colon (27), and therefore both these gentlemen opened the right side of this bowel. In one of M. Amussat's cases (9), the stricture was also situated at the junction of the ascending and transverse colon, but neither the cause nor the situation of the obstruction were detected till after death, and therefore the cæcum was opened by Littré's operation; in a second case (22), M. Amussat could not satisfy himself whether the obstruction arose from a stricture of the sigmoid flexure or from cancer of the omentum; and in a third case (20), the cause was quite unknown to him, and therefore in both cases he opened the right colon; in a fourth case (21), M. Amussat gives no reasons for his operating on the right side, in a case of cancer of the rectum, but as he felt the disease by his finger, there is no ground for supposing that there was an error in his diagnosis, although he seems to have selected the left side in other cases, when he was able to do so. Nor does any error appear in the diagnosis in three other cases, in which the cæcum and right colon were selected for the artificial anus, (1, 10, 26).

There is, in fact, only one case of operation on the right side in which it is probable that the surgeon would have made an opening in the left colon, if he had formed a more correct diagnosis; and it illustrates the second error of diagnosis to which I intend to draw the attention of the Society, namely, the difficulty of always distinguishing an obstruction, even in the lower part of the *colon*, from strangulation of the *small intestines*.

2, *a*. In this case (14), Mr. Avery, finding that a tube passed up nearly

fourteen inches from the anus; that a pint and a quarter of injections could be retained; and that a large resonant prominence was perceived in the right side of the abdomen, on which side there had formerly been a femoral hernia, and that there had been no previous symptom of stricture, was led to believe that the termination of the ilcum was probably strangulated by a band from the hernia. He therefore made an opening six inches long in the right side of the abdomen, and finding, after drawing the small intestines through the wound, that the great bowel was also distended, he proceeded to trace the colon from the distended cæcum down to a firm stricture of the pelvic portion of the sigmoid flexure. An artificial anus was made in the cæcum, but the patient died in twelve hours.

In this case the symptoms depending upon a stricture in the sigmoid flexure of the colon were believed to arise from an obstruction in the ileum. Perhaps regarded critically, after the event, it might be said that the vomiting never being distressing, the rejection of more than a pint and a quarter of the enemata, the tube only passing up nearly fourteen inches, and the great resonance of the swelling on the right side, should rather have led to the opinion that the retained fæces were more likely to be in the left colon, which was softer; but the femoral hernia on the right side naturally drew more attention to the swelling than it deserved.

In my own operation, the entire absence of any previous constipation, the early setting in of vomiting and distension of the whole abdomen, including the small intestines, and the greater tenderness and fulness and feeling of solidity between the umbilicus and pubes, might easily have led to the supposition of the small intestine being the seat of the obstruction; and both cases show the propriety of invariably examining the rectum and colon in all cases of obstruction.

b. In the next cases the opposite error was incurred, and obstruction in the small intestines was believed to be situated in the sigmoid flexure of the colon.

In Dr. Todd's case (13), Mr. Simon, after seven days' illness, made an incision in the right side of the abdomen, in order to form an artificial anus in the right colon, in which an obstruction was supposed to exist; but instead of this the small intestine was found distended and was opened, and after the man's death, a few hours subsequently, it was found that the ileum had been strangulated by a band extending from the mesentery to the mesocolon. Continued attacks of pain in the abdomen, attended with constipation from the boyhood of the patient, not unnaturally led to the idea, other symptoms not contradicting it, that so permanent an obstructing cause, affecting nutrition so little, was seated in the great intestine.

Mr. Luke has favoured me with the following particulars of a case which was under his care in the London Hospital in December last. On the ninth

or tenth day of obstruction, in a man about 40 years of age, he performed Littré's operation in the left inguinal region, but, contrary to his expectation, the sigmoid flexure was found empty, and was therefore not opened, nor was the real cause of obstruction discovered by examination in the wound. The patient died four or five days afterwards, of exhaustion, with little peritonitis, and it was found that a band had strangulated the small intestine as high up as its middle portion.*

Mr. Gay, (41), on the twelfth day of obstruction, performed Amussat's operation in the left lumbar colon, but found that it contained only some hard scybala; the patient died in less than twelve hours, and the fatal obstruction was found to have arisen from adhesion of the ileum, eight inches from its termination, to a cancerous uterus.

In all these three cases the symptoms were not sufficiently evident to prevent experienced surgeons from supposing that obstruction actually seated in the small intestines was situated about the sigmoid flexure—not even Mr. Luke, when the strangulated part was situated *four feet* above the cæcum;—it should, however, be stated that it was almost impossible for Mr. Gay, in the uncertainty which these cases show there may be from want of knowledge of general symptoms, to have suspected the existence of a stricture in the ileum, since the rectum adhered also to the uterus, and was obstructed so as to prevent the introduction of a tube above this part, and probably to have caused a lodgment of the scybala found in the colon between the two obstructed parts, giving him, therefore, all the local signs of obstruction in the rectum, which would naturally conceal those of the higher stricture.†

Still, although mistakes may occur, even in the hands of skilful surgeons, it is obvious from the Tables that they are very few in number, and appear to me by no means sufficient, on account of the obscurity of the symptoms, to justify the having recourse invariably to Littré's operation in preference to Amussat's, particularly as Mr. Luke's case, just mentioned, and another presently to be noticed, have shown, that even when opportunity has been afforded by such operation for search within the abdominal cavity, the real cause of obstruction has nevertheless escaped the observation of the operator. There is also, as yet, no known case of recovery after an artificial anus has been intentionally made in the small intestine, except when there has been the protrusion of a hernia, the circumstances of which, and the nature of the

* This case was described by Mr. Luke in a paper read at the Med. and Chir. Society, Feb. 10, 1852, and is published in the present volume, p. 243.

† Mr. Southam, of Salford, has obligingly forwarded to me an account of a case of obstruction produced by carcinoma of the duodenum, in which a tumour was formed by solid matter in a distended and displaced *stomach*, which I hope to see published on account of its interest in relation to the subject of diagnosis.

operation neeessary for it, are essentially different from those of a direct incision into the abdominal eavity to relieve a known or supposed eause of obstruction of the small intestine.

3. In the third place, as it bears important relation to the subjeet before the Society, the coincidence of a hernia with stricture of the rectum or eolon must not be overlooked, as a souree of error in diagnosis. It will be observed that in Mr. Avery's case, before narrated, (14), the previous existence of a hernia so far influenced his judgment, as to induee him to open the abdomen, without, as it appears, having examined the rectum, in the junction of whieh with the sigmoid flexure a narrow stricture existed. In the "Report of the Pathological Society" (thc Fourth, p. 218), is another case of exaetly the same kind; in this instanee, a man, 50 years of age, on the fifth day of his illness, supposed that a hernia had come down, after an interval of twenty years, and therefore Mr. Luke, thinking there might have been a reduction *en masse*, opened the abdomen at the upper and outer part of the inner ring on the left side, where the fulness had been felt; but the colon distended and hypertrophied above a very narrow strieture, situated twelve ineches from the external sphineter, was not felt by the finger in the wound, and consequently the patient died, unrelieved, four days afterwards. As very little inflammation appears to have been present in either case, the formation of an artificial anus might perhaps have prolonged the lives of both patients.

A case resembling these occurred to myself; and although I did diseover the strieture, I have sinee regretted that the operation for artificial anus was not performed. The case was that of a lady, about 45 years of age, a patient of Dr. Cursham, with whom I also met, at different times, in consultation, Drs. Seymour, Watson, and Blundell, and Mr. Stanley. I saw her first on August 8, 1845, on the fourth day of her illness, whieh presented the usual symptoms of strangulated bowel. She had worn a truss for a supposed femoral hernia on the right side for several years; but what appeared to be a small femoral hernia was now quite flaccid, and without the least tenderness in the tumour or near it, and she only felt pain in the epigastrium from constant vomiting, with distension of the abdomen, and the tumour itself disappeared under the use of iee in two or three hours after my first visit. As the symptoms eontinued, however, I examined the rectum, and with difficulty passed beyond an enlarged and depressed fundus uteri, but neither injections nor bougies would go beyond five or six ineches, during her illness. Betweeu the 8th and 12th there was again a feeling of something like hernial sac, once or twice as if with bowel in it, though quite flaceid; and lest the symptoms should in any manner depend on this cause, it was thought right by Mr. Stanley, who now saw the patient, as well as by myself, the tumour having, however, again disappeared, that I should eut down on the hernia; but when this was done there seemed to be no traee whatever of

any hernia, nor of any opening in the ring through which one was likely to have deseended, so that it was elear that the symptoms solely depended on the strieture of the eolon. The patient died on the 16th. There was a very tight narrow strieture of the sigmoid flexure, with slight uleerations within, but no disease of the bowel above, and seareely any inflammatory vaseularity. The uterus was mueh enlarged, and the rectum, below the strieture, was united by firm adhesion to the baek part of the uterus and vagina, so that a bougie was mueh obstrueted from this eause, as it was during life, about six ineches from the sphineter. A little fatty tumour and an absorbent gland appeared to have formed the tumour resembling a hernia, whieh dragged on the peritonæum, so as to form a kind of poueh, disappearing or eoming down at intervals.

The opening of the left eolon above the obstruetion was talked of by Mr. Stanley and myself in eonsultation, and I mueh regret that neither of us felt at the time suffieient eonfidenee in the published reports of the operation to propose its performanee. I now think it very probable that this lady, as well as a gentleman, whose ease I have previously mentioned, might have had their lives prolonged by the operation; and the former would very probably have eonsented to its performanee, though not the latter, in eonsequenee of the impression made on his mind by his father's death from the same disease.

[*Med. Chir. Trans.*, vol. xxxv., p. 85.

SUBSTANCE OF A CLINICAL LECTURE ON EXCISION OF THE OVARIUM,*

Delivered at St. George's Hospital, September 23rd, 1846.

THE subject of exeision of the ovarium has exeited so mueh interest of late, and so mueh has been said and done with regard to it, that a few observations on the operation you saw yesterday may be not without their use (whieh I eould not make to you after it had been done, owing to the present state of our operating theatre), partieularly as I do not know that any of you have seen the operation performed before; at any rate it has not been done here, and I believe it has only been performed three times previously in the London hospitals, and unfortunately all these terminated fatally.

* The first successful case in a London hospital.

It has been insinuated, indeed, that the surgeons of hospitals have been improperly backward in sanctioning the operation;—certainly they have not thrust themselves forward, but I doubt whether this has not arisen from their being but too well acquainted with the difficulties and dangers which must attend it, and which have been much underrated by some of those who have been most enthusiastic in its praise, as a general cure for ovarian tumours. If, however, the hospital-surgeons have been tardy in adopting the operation as an established one in surgery, it shows at least the groundlessness of another charge, which is often brought against them—I mean the wantonly inflicting pain for the sake of display.

For my own part, I remain very nearly of the same opinion now that I was twenty years ago, when Mr. Lizars first published his cases of this operation, with regard to the removal of these great tumours in an entire state by incisions of not less than twelve or fifteen inches long, and often much more, or from the ensiform cartilage to the pubes—operations which I look upon as almost invariably unjustifiable. But as soon as ever Mr. Jeaffreson published his account of the great improvement he had proposed and practised, by lessening the bulk of the tumours by drawing off the greater part of the fluid contents, so as to allow the tumour to be removed by an incision of moderate size (which I think was in the latter part of 1836, or in the beginning of the following year), I have always spoken favourably of the principle of the operation in my lectures; and since its propriety had been still further tested by a few cases in the following years, I have occasionally offered to perform it in what I believed to be proper cases. In two of these I know that the operation was performed by another gentleman, and the patients both recovered from it, as I hope I may be allowed to think they would have done if I had performed the operation myself; for I really cannot see any reason, as has also been insinuated, why those who are in the constant habit of performing a variety of operations, should be less competent to conduct both the preliminary and the after-treatment, than those whose experience has been more limited, if not confined to this particular operation. One of these cases presented itself three or four years ago; the other patient, I have since learned from Dr. Page, had previously made up her mind to have it done by Dr. Bird, and only came to the hospital, about two years ago, for further opinions upon its propriety.

With regard to the nature of ovarian tumours generally (which it is not my present intention to dwell upon), no one, I think, who has been long at an hospital can fail to be satisfied that the opinion now most generally entertained is better founded than the older notion of the disease; and that they are not the comparatively innocent tumours which they were supposed to be, inconvenient indeed, but not much calculated to shorten life. It has

been said by several who have investigated the subject, that the average duration of life after the tumours have shown themselves is not above five or six years, much of which is passed in a state of great suffering and distress; and I am inclined to think it may not be a very erroneous estimate, which makes them therefore a highly dangerous complaint, and this especially after they have once required the operation of tapping; for Dr. Lever, who has collected the result of 100 cases, says that the average life after tapping was less than two years and a half; nor do I think this calculation also likely to be very wrong. Doubtless, also, many of the most indolent cases of supposed ovarian tumours were really instances of other disease, especially of fibrous tumour of the uterus, which is often slow in its progress, and, as many improper operations show, is easily mistaken for ovarian disease. A tumour which was sent to the hospital as ovarian, was found to be a fibrous tumour with cysts, and weighed as much as 56 lbs; and in a case which I tapped lately, I drew off as much as fifteen pints of fluid, while much solid matter and other cysts remained behind. The tumour was found to be a fibrous one, its attachment to the uterus being by a narrow pedicle. By allowing for these, then, the average of real ovarian disease becomes still shorter, and the tumour consequently more fatal to life. The distinction between the two diseases is obscure; and you have very recently seen an instance of what I believe to be fibrous tumour, which has been about three months under treatment, and has become indolent and stationary: this tumour is supposed, however, by one gentleman who has seen much of these cases, to be an ovarian tumour.

But although this mortality in ovarian disease, and the insufficiency of any known means to do more than retard its progress, justify, in my mind, the excision of the tumour *sometimes*, do not for a moment be led away by enthusiastic encomiums to suppose that it can ever become general, or can ever be lightly undertaken. An operation in which the death of the patient has even taken place in an hour and a half, and often in less than twenty-four hours, while the disease, left to itself, would most probably not be fatal for five years, is not one which can be hastily determined on. Certainly never without a full knowledge by the patient herself of all the facts of the case; still less is she to be misled or over-persuaded into the having it performed. Now this very patient of ours was impressed with the idea—I know not from whom acquired — that tapping was a very dangerous operation, of which a great many died, and that she ought to have the tumour removed, actually believing that this operation was less dangerous than tapping! I need not say, that I thought it my duty to explain to her a little more accurately the comparative dangers of the two modes of procedure, before performing the excision of the tumour.

Attempts have been made to test the propriety of the operation by a

collection of all the known cases of the operation; and such tables have been drawn up by Mr. Phillips, my former pupil and friend Dr. Jeaffreson, by Dr. Churchill and others; the latest, I believe, is that given by Mr. Lee, and published in part by Mr. South in the last number of his translation of Chelius's Surgery; and most instructive these tables certainly are, as to the difficulties and dangers of the operation.

Taking this table of Mr. South's (in which there are, however, many mistakes), it would appear that the operation has been attempted not less than 108 times, and that of these, sixty-nine have recovered and thirty-nine have died; so that the deaths actually produced by the operation have been more than one-third of the whole number,—a fearful mortality, arising from the recklessness with which it has been done in great measure, and perhaps less than the real truth, for it is currently reported that several fatal cases have not been published, though it is the bounden duty of all, when such a question is at stake, to contribute as far as they can to its elucidation, but more especially is it the duty of those who have contributed to the encouragement of others to perform it.

But we learn further, that of these 108 cases *attempted*, the operation was only *completed* in 84, and left *incomplete* in 24; and it is curious that the mortality was less in those in whom the operation could not be finished after it was begun, than in those in whom it was completed; of the 84 completed cases, 31 having died, and 53 recovered, being two-fifths fatal; while of the 24 unfinished cases, 8 died and 16 recovered, being exactly one-third fatal.

What a striking lesson do we learn from this statement, of the haste with which many have acted, when it appears that an error of diagnosis took place in 24 of these cases—actually in two cases for every seven in which the operation could be performed at all, whether rightly or wrongly! and it appears that in at least five cases no tumour at all existed,—in others the tumour was of the liver or intestines,—in several it was a fibrous tumour of the uterus, and the uterus itself has been taken out in two or three instances instead of an ovarian tumour; with what result you may imagine.

But then this statement includes *all kinds* of operation, while I said just now that I could only feel favourable to Mr. Jeaffreson's plan of emptying the fluid contents of the tumour, so that a moderate sized incision may suffice; and the two plans must be contrasted with one another, to give a fair estimate of the operation.

Mr. Lee tells us, that of the 108 cases a large incision was made in 79 cases, a small one in twenty-three, and an opening of unknown length in 6.

Of the 79 large incisions, 45 cases recovered and 34 died, being about three deaths to four recoveries; that is, three-fourths were fatal.

Of the 23 small incisions, 19 recovered and four died, being only one death to five recoveries; so that only one-sixth were fatal.

And of the 6 other cases of unknown length of incision, only one died.

Mr. Phillips's table is not very dissimilar to this in some respects, though it differs from it in others. Of the whole number, 82, collected by him, 33 died, and 49 recovered, so that the deaths were altogether about two-fifths of the cases operated on, as in Mr. Lee's table. He divides these 82 into 55 long incisions and 27 short ones; and tells us that of the 55 long incisions, 26 died and 29 recovered, the deaths being nearly equal to the recoveries at this earlier part of the history of the operation. Of the 27 smaller incisions only 7 died, while 20 recovered, being nearly one death to four recoveries; a greater mortality than Mr. Lee's table, which rejects four of these from among the smaller incisions, of which four, three you will observe were fatal. I will not say which is most accurate, but they both agree in the much less danger of the smaller operation; as, however, the whole number is less than those of the greater operation, we do not yet possess sufficient data to feel assured of the ultimate result of this mode of operation.

But further, you must remember that *recovery* from this operation is not necessarily a cure, owing to the difficulty of diagnosis which I have before alluded to, and still more to the impossibility of ascertaining with certainty, even with a correct diagnosis of the nature of the tumour, whether there are or are not such adhesions as to make the operation more hazardous, or oblige it to be desisted from after it has been begun. Mr. Lee's table does not show this exactly; but Mr. Phillips gives us only 36 cures for 33 deaths; so that the cures are not much more than the deaths, and considerably less than half the operations. Taking the greater operations the result is still less flattering, as there are in 55 operations only 23 cures to 26 deaths, with 6 recoveries without a cure. Of the 27 smaller operations, which I before mentioned, 13 were cured and 7 died, leaving 7 other recoveries without cure, all of whom, I need hardly say, have incurred great hazard of their lives.

On the whole, then, you have ample proof that the cases proper for this operation are not very numerous; nevertheless, I think there are some in which the minor operation may be performed with justice to our patients, and of this number appeared the present case.

I will not go so far as to say that the tumour is never to be extracted entire, but I think there are few indeed, in which it is right to operate at all, in which the bulk of the tumour may not be lessened by tapping, and the risk, therefore, as we have seen by the tables, be thereby much lessened. I do not know whether it may not be found hereafter that a few cases of solid tumour may be removed, and, perhaps, in precisely those circumstances now looked on as less proper for its performance. For instance, a small tumour may be complicated with ascites, which is regarded as an unfavourable complication, because peritonitis may be more likely to follow the

excision ; but, then, on the other hand, a tumour which has already caused this irritation in the peritoneal cavity, when of small size, is less likely to be slow and indolent in its future progress, and the chance of an earlier death from the disease itself may justify a greater amount of risk in attempting a permanent cure. And the same reasoning will apply to a tumour which is increasing more rapidly than usual, and has, therefore, induced some emaciation and failure of health while still of moderate dimensions. Recovery after operation may be less probable in these circumstances than when the health is unimpaired ; but, on the other hand, we know that these circumstances indicate a comparatively early fatal result, if nothing is done for the patient. It is fortunate, however, that on the whole, the more solid tumours, when free from any malignant structures, are much slower than the single or larger cysts in their growth.

Let me next read you the account of our patient. "Emma Wilcox, 27 years of age, a servant, and unmarried, who was admitted by Dr. Nairne, on September 2nd, with ovarian dropsy. Abdomen much distended, measuring 40 inches round at the umbilicus ; contents of tumour very fluid, no solid matter felt ; occasional slight pain in the right iliac region ; breathing interfered with in the recumbent posture ; some difficulty in passing water ; catamenia regular ; health good ; umbilicus not prominent. She first noticed the tumour, which was said to be hard, painful, and about the size of the palm of the hand, in the right iliac region, about three or four years ago ; it remained nearly of the same size till eight months ago, when it increased rapidly, extending over the whole abdomen, and having its present soft fluctuating feel. She has been under treatment, but has never been tapped."

I was asked to see her a day or two afterwards, and the case seemed peculiarly favourable for excision, of which she had the not very accurate idea which I have already mentioned, but which she still chose to submit to, when fully and fairly explained to her. She was young and apparently in good health. The tumour appeared to be a single cyst, without any admixture of solid matter : there was evidently no fluid in the peritoneum, for you could easily hear the sound of the air in the colon on each side in whatever position she was placed. There was no evidence of any inflammation in former times making the existence of adhesions probable ; there was no mal-position of the uterus, as if it was adherent to or very closely connected with this organ, and yet the size of the tumour was so great, and the effect of pressure already so considerable, that tapping must be had recourse to before long. I determined, therefore, on excision, with the concurrence of those of my colleagues who saw her, and only waited till the irritation of the next monthly period was over, and a few days allowed for the increased vascularity of the parts during that time to subside. Our notes say that the catamenia appeared on the 5th, out of usual time, but only lasted one day ; on the 8th

this function again took place, and continued till the 17th, a longer time than usual, showing some irritation of these organs, and I fixed the 22nd for the operation.

It is generally advisable before any operation to give a purgative once or twice to get the blood into a healthy condition, and obviate any irritation; and particularly so in such an operation as this, that the intestinal tube may be flaccid enough not to protrude much at the time, nor contribute to any disposition to peritonitis by its peristaltic movements. A dose of blue pill and colocynth was therefore given on the 17th, and I meant to repeat it on the 20th, and to let her abstain from meat for two days, as she was rather stout. On the 19th, however, I found her very feverish, and with pain and tenderness in the right iliac region, and I gave her three grains of calomel, with six of Dover's powder, and a little castor oil, with saline mixture. I may observe, that you cannot make a greater mistake than to bleed and reduce a patient much before any great operation; it is ill borne, and the reparative processes are ill performed when this is done, and you are left without resource if inflammation takes place, the chance of which is actually increased by depletion to any extent. This woman was acted on more than I desired by the medicine, and her tongue was a little loaded on the 21st; as, however, pain was only slightly felt in another part of the abdomen, I thought it better not to postpone the operation, which would thus dwell longer on her mind, and on the morning of the 22nd an injection was given, and she was desired to empty the bladder just before she came upstairs for the operation.

A good deal has been said by Mr. Lizars, who first removed an ovarian tumour in this country, and by others who have succeeded him, on the necessity of a high temperature in the room, not only during the operation, but for several days afterwards, and much unnecessary importance is attached, I think, to this circumstance. You saw, indeed, that I had a fire in the room, the thermometer showing about 74 degrees of heat, and I shut the windows when the patient was coming in. Doubtless, it is very right in operations on the cavity of the peritoneum, with exposure of the viscera, not to have too great a difference between the temperature of the air and of the body. It is no new principle, however, in surgery. You never see us operate for hernia, on a winter's night, in a cold theatre, but in the ward; and this has been my practice as long as I can remember. It is well, too, in this particular operation, to have the room capable of being made tolerably warm for the next twenty-four hours, for fear you should be obliged to open the wound again, as has been required in consequence of hæmorrhage, and of protrusion of bowel through the wound. But to have the room like an oven for several days seems quite absurd, and likely to cause hæmorrhage and syncope: even at 80 degrees and upwards the air is still above 20 degrees colder than the peritoneum, and a few degrees less will do no harm, and I

believe yourselves, as well as the patient and operator, found 74 quite enough; indeed, I was obliged to open a window for her benefit before she was taken to bed. To keep up a great heat, as a part of the subsequent treatment for several days, which has been much insisted on, appears to be going back to the days before Sydenham, of scarlet clothes and hot rooms for small-pox. Let the temperature be agreeable to the patient, and proportioned to the collapse or excitement of pulse present, and it will be more likely to be useful to her welfare: even last night the patient was faint from the room being too close, though a high temperature was purposely avoided.

The position in which you saw the patient placed was at first half-sitting at the end of the bed, with her feet on the ground, which is more convenient for the proper vessels than lying down during the evacuation of the fluid. When this was nearly completed, she was lowered to a nearly horizontal position to obviate faintness, and also because protrusion of the intestines was by this means made less likely to take place, and the removal of the sac from its attachments in the pelvis rendered much easier. You saw, however, how easily the bowels, in the flaccid state to which they had been reduced, were prevented from ever passing out of the wound. I will next read the account which has been written of the operation, and then make a few remarks on each step in the proceeding.

"The patient having been placed on her back, with her shoulders supported by a bed-chair, an incision, about three inches in length, was made in the median line of the abdomen, commencing a little below the umbilicus, and extending downwards towards the pubes. The linea alba was opened to the extent of about an inch; the peritoneum was exposed, and cautiously divided on a director: scarcely any hæmorrhage occurred in this part of the operation. The cyst was then seen through the incision; it was very vascular, but had contracted no adhesions to the surrounding parts. The incision of the tendon and peritoneum was then prolonged by a probe-pointed bistoury on the finger so as to expose the cyst for about three inches altogether. It was punctured with a trocar, and 17½ pints of very clear limpid fluid drawn off, of sp. gr. 1·006, and only very slightly clouded on addition of acid. As the cyst collapsed on the evacuation of the fluid, it became protruded through the incision, and was seen to be developed in the folds of the broad ligament, with the left ovary on its surface close to the pedicle: it was thin and did not contain any solid matter. A needle carrying a double ligature was passed through the pedicle, and the two portions tied separately; a ligature was then placed round the whole circumference of the pedicle in the same situation as the others, and the tumour cut off beyond the ligature. No bleeding took place.

"At the early part of the operation the patient was faint, and required a

small quantity of brandy and water, (one tea-spoonful of brandy was all that was given). She remained, however, quite sensible during the whole time, and complained at times of pain in the back. The edges of the incision were brought together by four sutures and adhesive strapping, and a broad-tailed bandage, which had been placed under her before the operation."

I will next make a few observations on the successive stages of the operation, which is thus described in the note-book by Mr. Johnson.

The most convenient place for the first incision appears to be about half way between the umbilicus and the pubes, and, as the patient was fat, I made it about three inches long, down to the linea alba; but less would be sufficient for a thinner person. How any man in his senses could think of at once opening the abdomen with a long incision, I cannot imagine; but it is not at any rate likely to be done again, after the numerous mistakes which I have alluded to. Each step ought to be carefully performed, so as to incur as little hazard as possible, if it is found that the operation cannot be completed. I then opened the linea alba for about an inch, exposing the peritoneum, and it appeared so very vascular and thick over the tumour that I thought for a few seconds that a portion of omentum was situated over it, and of course adherent to it. I found, however, by moving it that the gentle pressure made at the sides of the abdomen had folded the peritoneum on itself, making several folds in thickness; and, on drawing them apart, the membrane had its usual appearance, and I divided it with the knife and director to the same extent as the tendon, exposing the cyst. The finger introduced into the opening ascertained that as far as it would reach all round the small opening there was no adhesion whatever, and I therefore divided the wound downwards by a probe-pointed bistoury on the finger, the cyst, in which numerous and very large vessels were seen, being exposed for about the same extent as the aperture made in the parietes. The non-existence of adhesions in the front of the tumour, or their easily yielding to the finger, does not necessarily prove that the back part may not be firmly adherent, but it renders it less likely to be found; and, on the other hand, if firm adhesions are found in this part of the operation, it can be desisted from at once, and very little pain is likely to follow an incision which does not open the cavity of the abdomen beyond the adhesions. I then passed a common trocar into the sac to evacuate the fluid, and, as it flowed, I passed a gum catheter through it that the bottom of the sac might be perfectly emptied, and that when laid on her back, if required, the fluid might be more readily conveyed into the vessels; but, as the fluid came away more slowly through it, I slipped the canula in again, and withdrew the catheter, which was, in fact, unnecessary for the purposes I had in view. I had a pronged forceps at hand, which has often been employed to hold the tumour before it has been opened, to prevent its receding, but I did not use it, for you saw that,

as some of the fluid was withdrawn, the cyst began to pass through the wound; then somewhat more rapidly, so that I held it with my hands to restrain its exit in some measure till all the two gallons of water had escaped: at the end of which time all the sac was on the outside of the abdomen, and I scarcely pulled on it at all to reach the broad substance which attached it to the uterus, and, pressure being made on the abdomen, very little faintness attended the tapping, nor any vomiting, which has been sometimes found to be very troublesome by its effects on the intestines at the wound.

Many dangerous and fatal effects have resulted from the next stage of the operation, the severing the large blood-vessels in the pedicle. Separating its parts, a needle, carrying a strong double silk, was passed through the thinnest part, and each half of the pedicle tied tightly, in doing which the silk has often given way. Then, as the notes said, another silk was tied round the whole of the pedicle, which I recommend you always to do, when you tie a large nævus, or any vascular tumour, in two or more portions, if the form of the base admit of it, as it gives greater security against insufficient pressure of any vessel in the centre, and against the slipping of the pedicle within the silks. Do not be tempted, either in an operation of this kind, or where you cut off a thick portion of omentum, in a case of hernia, to cut off the part you are going to remove, in order to tie the bleeding vessels separately as on a stump; you may depend on it you would sometimes have fatal hæmorrhage from this mode of proceeding; some vessel easily escaping observation, when the patient is faint and low, and bleeding afterwards into the peritoneum. I have witnessed it more than once in hernia, and it is still more likely in this operation.

Having, then, tied the pedicle securely, I cut off the sac with the probe-pointed knife, and carefully examined the large surface, in which vessels of considerable diameter were seen, and found that when I had sponged out the blood remaining in them, not a drop more escaped. I left, as you saw, a part of some size to slough off with the ligatures, because fatal hæmorrhage has taken place by cutting the pedicle too close to the ligatures, allowing the centre to slip through it, and loosen the pressure on the whole. I have seen the same thing with hæmorroids and nœvi, and it easily happens when the base is large, and the traction great on the surrounding parts. This part of the operation seems to be generally the most painful of all, as might be expected, the pain being referred to the source of the spermatic nerves in the loins.

I left all the six large silks, which were thus attached to the pedicle, when it was allowed to recede into the abdomen, instead of cutting any of them off near the knot, for the same reason that I leave both ends in tying a vessel for aneurism; namely, to leave a considerable opening through which the pus and sloughy substance of the pedicle might easily escape, which are

otherwise liable to be confined, when the ligatures in the orifice are only half the size of the knots within.

In dressing all wounds of the abdominal parietes you must use sutures tolerably close to one another, and they must include the muscle or tendon, as well as the integuments, in order to prevent subsequent hernial protrusion of the intestine. The bowel has been found on the outside of the wound on a subsequent day in this particular operation, and there is in the museum below a preparation which shows the necessity of this caution, a small stab by a stiletto having been followed by a fatal hernia some years afterwards between the muscles and the integuments through the small aperture left by the wound. You see in this circumstance also, another reason why the incision made in the operation should not be larger than is sufficient to let the tumour readily escape, since subsequent hernia through the cicatrix may be more easily occasioned by a large wound.

It is unnecessary to say more than that the plasters employed went half round the abdomen for security, but were narrow at the wound, to allow fluid to escape, and that pressure was continued by the bandage to prevent fainting and distension by flatus before the muscular tone was recovered.

Since the operation our patient has gone on perfectly well: pain in the back was at first a good deal complained of, and 20 drops of laudanum were given in half an ounce of peppermint water, twice within the first three hours. There was also some collapse, requiring hot bottles to the feet, but at 4¼ P.M. the pain was less, the pulse 84, and restored to its former strength, and the feet and body were again warm.

At 9½ P.M. the notes say that she complains of rather more pain across the lower part of the abdomen, in the region of the bladder; the pulse is also higher, 99; the catheter was introduced, and about 8 ounces of water drawn off: soon afterwards she fell asleep, and when seen at 10½ P.M. she was quite easy, the pulse 84, and she appeared still inclined to sleep. At 2½ this morning the pulse again rose to 92, with pain and tenderness in the abdomen, but it went down to 86 soon after the water was again drawn off; and she again had some quiet sleep. At 8 A.M. she was lying very quiet, and has had a good deal of sleep; she has had no sickness, nor any bad symptom of any kind; the pulse has remained pretty steady, about 84; the tongue continues to be white, and the breath is rather fœtid: this is from the feverish attack, which I before mentioned, connected with the bowels, and which, as I told you, made me hesitate about operating yesterday, and now, 24 hours after the operation, she remains free from any bad symptom.

With regard to the after treatment of this case, and similar operations on the abdomen, I will only allude to one or two particulars. First, you will find it desirable, soon after the operation, as after common tapping, always

to give a dose of some narcotic (and laudanum or black drop are less likely to cause sickness than morphia), to relieve the shock of the operation on the constitution, and enable the patient to bear the great alteration in the state of the abdomen, and its circulation, produced by the removal of the pressure of many quarts of liquid, and particularly if there is a good deal of pain. Secondly, you will observe that she has been allowed scarcely anything but cold water, and that in very small quantities at a time, and she herself is unwilling to take more, on account of a little uneasiness of abdomen which follows it. No point is more strongly dwelt upon in Mr. Travers's excellent work on Injuries of the Intestines, than the necessity of almost entire abstinence from food of any kind, and it is no doubt of the greatest importance to prevent the motion and distension of the moveable viscera, which are so intimately connected with the abdominal wound: you would not for the same reason give saline draughts for fever, nor would you give purgatives nor large injections till time had been afforded for organization of lymph around the injured part; and you may notice that I gave her opiates in only half an ounce of liquid. The patient after an injury or operation can well afford, in general, to starve for a day or two, which is more than can often be allowed, though it would be equally desirable, after the operation for hernia, which you generally see performed when the patient is already a good deal exhausted. A third point in the after treatment that requires much judgment is the administration of stimulants for collapse and depression; in our patient none whatever has yet been required, but sometimes it would seem after this operation that much distress has arisen, as it sometimes does after tapping, from distension of the stomach by flatulence; and carefully distinguishing the pain arising from this circumstance from that of inflammation, much relief is experienced from the use of a teaspoonful of warm brandy and water, or arrowroot with spice and with a little opium.

Twenty-four hours having now elapsed without any acceleration of the pulse or tenderness of abdomen, our patient is already nearly safe from the more manageable form of acute peritonitis, which can generally be conquered by early depletion and calomel; of course, however, she is not yet safe from the more dangerous low form of this disease which you more often witness, and in which depletion is seldom useful; and I need not say, however favourable all circumstances appeared in this case for the performance of the operation, that no one can be free from much hazard, while a large silk cord hangs out of the abdomen, in a cavity formed by inflammation in the peritoneum itself, containing purulent secretion, necessarily of a somewhat foul character, because the cavity includes a mortified substance of considerable size, which has to soften and ulcerate away from its attachment to the uterus; a state which, nevertheless, may perhaps be borne by the peritoneum accustomed to

a tumour, more easily than by a healthy one, for the same reason that an amputation for a disease is so much less dangerous than one performed for an accident.

Since the lecture was given the patient continued for a fortnight almost without any bad symptom, so that detailed notes are scarcely necessary; she has never once had any sickness, and has never had any fever. She was allowed to make water for herself on the evening of the 23rd, the day after the operation, and was allowed arrowroot and tea, of which she was unwilling to take much as it gave a little pain.

On the 24th, she had passed a very quiet night after another dose of laudanum, and she could take her food with less uneasiness; her pulse had risen to 110, but soft, and at 2 o'clock she complained of a good deal of pain in paroxysms which made her cry out, and the abdomen was tender, but the pulse varied from 84 to 104, sometimes with sharpness, at other times quite soft and compressible; there was no anxiety of countenance, nor any nausea or sickness; and there was no tension or hardness of the abdomen. The wound also had entirely united, except where the ligatures passed out, and some serous pus was coming readily out of this opening. It was judged, therefore, that the symptoms were not inflammatory, but were connected with the bowels. A common injection was therefore ordered with 15 drops of laudanum, and the same quantity of laudanum was given by the mouth. The upper suture was also taken out, and two of the others cut across to relieve a little tightness of skin, but were not drawn away, as they were not yet loosened by suppuration.

These remedies were effectual, so that at 6 P.M. she was nearly free from pain, and had slept, the injection having brought away a little fæculent matter.

On the 25th she had had a most comfortable night, with a good deal of sleep, and the bowels had acted three times, and the tongue was clearer. The pulse was 120, but quite soft, and fuller than yesterday. All the sutures were removed.

On the 28th a little alarm was created by her feeling very cold and faint, with some tenderness of abdomen, but it was from the same cause as before, and some blue pill with rhubarb and magnesia removed these symptoms, and this she has required several times. The pus also was rendered foul and offensive by the state of her bowels, and a poultice was generally found best for the wound on this account.

On the 29th her beef-tea and arrowroot were changed for chicken and meat, with a glass of wine, and in a day or two a second glass was given, and a little brandy for the flatulence she occasionally suffered from.

On Oct. 3rd she was ordered to sit up so as to allow the matter a more

dependent exit than when she was lying on her back in bed; matter in small quantity, and of healthy character, readily coming away by the side of the ligature, and the rest of the wound remaining sound.

On the 11th the left leg began to swell, with considerable pain from the groin down the limb, especially in the calf, where the swelling was greatest, but there was not the least constitutional disturbance. Mr. Hawkins believed that there was inflammation of the external iliac vein by the side of the ligature, obstructing its channel and causing swelling of the limb below, and pain in all the veins, but that they were not themselves inflamed, as there was no hardness about them, and the tenderness, though greatest in the trunks, was also felt generally in the limb. She was ordered to be kept quiet in bed with the leg elevated, and to have chamomile poultices applied for two or three days, and her wine was discontinued. The attack gradually subsided in a few days' time, and she had no illness from it, and required only one or two gentle doses of blue pill and rhubarb.

On the 13th, the 22nd day after the operation, two of the ligatures came away with gentle pulling, which had been occasionally tried for the few days preceding, and on the 16th the remaining ligature was extracted, and the orifice entirely closed on the 19th.

[*Medical Gazette*, vol. iii., *new series*, p. 735.

CASES OF
WARTY TUMOURS IN CICATRICES.

Read 10th December, 1833.

In describing a variety of tumours and other diseases, medical men are in the habit of adopting terms to which different significations are attached by different persons, and by this means great obscurity has arisen in pathological anatomy, which might have been avoided by more precise definitions: and among other terms of this sort is the word *malignant*, as applied to disease. By a malignant disease is meant by one person a local malady, depending upon a constitutional taint, which renders that malady incurable and invariably fatal, in the way that cancer and fungus hæmatodes are invariably fatal; while another person will call a disease *malignant* which is simply *incurable*, without any definite reference in his mind to the state of the constitution. Thus it is that lupus, and the corroding ulcer of the uterus, are called *malignant*, though in the more formidable sense they are clearly

not so, since the disease does not contaminate either the surrounding parts or the absorbent glands, by the formation in them of a *new structure*, like that developed in the seat of the primary disease, nor is a similar disease established in another part of the body by means of this contamination.

Even in those diseases which are manifestly malignant, in the more confined sense in which cancer is malignant, there is great difference in the *degree* of malignancy, which the surgeon ought well to understand. Cancer of the breast very often returns in the same part, when removed by the knife; almost always affects the absorbent glands, and the appearance of a similar disease in some internal organ is always apprehended. In cancer of the scrotum, on the other hand, the removal of the diseased part is undertaken with well-grounded confidence that the disease will not reappear in the same place; the absorbent glands are often not affected, and scarcely ever is any similar disease found in the liver or any other internal organ.

But it seems to me that we want some word for those diseases which *do form a new structure* capable, apparently, of contaminating the surrounding parts, so that the removal of the whole of the altered structure is necessary, but which *do not*, as far as I know, produce any contaminating influence upon the absorbent glands, and have no tendency whatever to reappear in a distant and unconnected part of the body. Such a disease is familiar to most surgeons in the skin of the face of elderly persons, and is often, but I think erroneously, called *cancerous* and *malignant*, since if the new structure at its basis be completely taken away, there need be no apprehension of any return of the disease, either in the same part or elsewhere: or at least if the new structure really possesses the nature of *cancer*, it must be clearly understood that the disease is *cancerous* and *malignant* in the very lowest degree. Of this kind also is the disease which I purpose to describe by the recital of a few cases which have fallen under my observation, and which, as far as I know, is not described in any surgical writings.

The tumour, which I will call the WARTY TUMOUR OF CICATRICES, makes its appearance in some old scar, many years after the injury which has produced it has been healed, whether a burn, a cut, or a laceration of the skin; and it arises equally from a flogging or a scald, in which the skin alone has been injured, or from a cut or gunshot wound, which injures also the tendons or bones below the skin, and makes a more complicated cicatrix. There appears in the first place a little wart, or warty tumour, in the cicatrix, which is dry and covered with a thin cuticle, but which soon becomes moist, and partially ulcerated, like the warts of mucous membranes, from which a thin and offensive, and semi-purulent fluid is secreted. In this stage it gives no pain nor inconvenience.

Case I.

This first stage is shown in a preparation of a tumour, about the size of a small apple, which was removed, about the year 1826, by Sir Benjamin Brodie, in St. George's Hospital, from a man who had been a soldier in India for many years, and had been repeatedly flogged for some offences. The last punishment had been a flogging of 1000 lashes, eleven years before his admission. In the cicatrix several warts sprung up, which coalesced to form a tumour, the probe passing between them to the basis of the disease. Around the tumour the skin was of a dark livid colour, and studded with several smaller warts. The man easily recovered, and had no return of the disease.

In the second stage of the disease the growth of the tumour becomes more rapid, the warty appearance being in some measure lost, a more solid substance projecting from the diseased skin, which bears much resemblance to the fungus of fungus hæmatodes; the formation of fresh warts being still seen around the tumour, and preceding the change which has been alluded to. The tumour is very vascular, and bleeds when touched, but its irregular surface still allows the probe to pass through its structure, except where it is most firm.

Case II.

John Pegram, æt. 45, was admitted into St. George's Hospital, April 18th, 1827, under the care of Mr. Jeffreys.

There was a large tumour connected with the skin of the back, somewhat elevated, and with the edges overlapping the surrounding skin, which was drawn in and puckered round the tumour. The tumour was about five inches in diameter, and the skin appeared to be partly connected with the spinous processes of the dorsal vertebræ, and with the spine of the scapula. The tumour was warty and irregular, and had an ulcerated surface, discharging a thin sanious matter. The man's countenance was sallow, the appetite however not impaired, the bowels in general constipated, and his sleep at night disturbed by shooting pain in the back.

The tumour arose in a cicatrix produced by a flogging which he had received twenty-seven years before, the effects of the punishment not having been quite got rid of for eighteen months after it had been received; but since that time the cicatrix had remained quite well till September of the last year, when a piece of wood fell upon him, and slightly grazed the skin. This healed easily, but shortly afterwards he found a small lump in the part, which soon ulcerated, though without much pain. At Christmas last it had acquired the size of a penny-piece, when he began to experience pain, and lost flesh considerably; and the tumour progressively increased to its present

size. About four days after his admission, he felt pain, *like cramp*, in the ham and calf of one leg, which subsided however without swelling or tension, and on the 27th the tumour was removed by operation, the actual cautery being applied over the spine of the scapula, where the tumour was most fixed, and lint dipped in a strong solution of sulphate of copper applied to the upper part of the exposed surface, which did not look quite so healthy as the rest.

The wound looked healthy when dressed on the 30th, and the pulse was only 96 for three days after the operation ; but on the 1st of May, four days after the removal of the tumour, he was attacked with severe rigors, with profuse perspiration, and died on the 4th.

The cause of death appeared to have been inflammation of the veins of the leg, of which there had been such trifling evidence before the operation, that it was disregarded. All the deep veins, however from the foot to the internal iliac, were filled, and the circulation wholly stopped by coagula, which extended even into the muscular branches. Their coats were considerably thickened, especially about the ham, where the pain had been felt, and there was slight purulent effusion into the cellular membrane around the popliteal vein. The superficial veins were healthy and pervious. There was pus also diffused in the cellular membrane behind the peritoneum, about the iliac and psoas muscles. The right pleura contained a pint of sero-purulent fluid, and there was thick purulent secretion in considerable quantity in the cells of the lung. Nothing remarkable was observed in the wound, or in other parts of the body, and the patient's death seemed therefore to be quite unconnected with the tumour, unless absorption of pus from its surface, previous to the operation, had given occasion to the venous inflammation and serous effusion.

The preparation of this tumour, however, does not show the appearance and character of the disease so well as those taken from the next case, of which I had a drawing made, which has been placed on the table with the preparation. In them the relation of the disease to the subjacent parts is well seen ; and it will be observed, that even when of very large size, it is still essentially a disease of the skin. The cutis around the tumour, which has not yet become prominent in the form of warts, is thickened and fibrous, and divided by furrows, having very much the appearance of the skin from which the hoof of the horse grows, and to which it is attached. The section of the central tumours is firm and smooth, but if carefully examined may still be found to consist of fibres rising perpendicularly from the base of the tumour, where it is attached to the fascia, all trace of the original texture of the skin being here lost, though it may be gradually traced into the unchanged part of the cutis of the cicatrix around the tumour.

Case III.

Susan Farrington, æt. 28, was admitted into St. George's Hospital, Oct. 23, 1833, under my care.

The left leg and foot had been scalded severely, when she was a child, so that the sore was more than a year in healing, and the surface of the cicatrix has since then frequently ulcerated, the last time being about two years ago; but on these occasions the ulcer presented no remarkable appearance. Four months ago the sore ulcerated afresh, and in about six weeks began to put on its present raised appearance.

On her admission there was a prominent tumour, about two inches and a half above the surrounding skin, which was four or five inches long and extended more than two-thirds round the leg. The surface had the usual irregular warty appearance of these tumours, and discharged a very fœtid pus. The cicatrization of the former scald extended from the toes to very near the knee, and was wrinkled towards the tumour. The tumour allowed the probe to pass through it very readily, and when thus examined in various directions, there seemed to be no softening of the periosteum of the tibia, nor of the fascia of the leg.

She had latterly become thin and out of health, with a furred tongue, and quick and weak pulse, and more or less restlessness, from excessive pain and irritation in the tumour.

She improved a little in health at first under an alterative and tonic treatment, but the tumour continued to extend, and with increased rapidity. After a consultation with my colleagues, amputation was proposed to her; the great extent of the surface rendering the excision of the tumour impossible, with any hope of new skin subsequently forming, so as to make the limb again useful; but the operation was not consented to.

After this the pain increased very much, the tumour spread very rapidly, and her health became so much disturbed that she was herself perhaps aware of the fatal character of the disease; and on coming to the hospital on the 28th of November, I found she had just sent a message, to say that if I would remove the limb immediately, she would consent to the operation, but not, if it could not be done at that time. Of course I did not delay the amputation, but removed the leg rather nearer the knee than usual, making a flap chiefly from the back of the leg, in order to leave as little as possible of the old cicatrix, which did not reach so high on the back part as it did in front.

By the removal of so extensive and so painful a disease, an immediate amendment has taken place in her health, and the stump is healing favourably.*

* July, 1835. This patient was in the hospital not long since, for another disease, the stump having remained perfectly sound.

It will be seen, on examination of the preparations, that the tibia was perfectly healthy, excepting an addition of new bone from common inflammation, and that the disease had not extended through the fascia to which it adhered. The drawing was taken about three weeks before the operation, when the tumour began to lose some of its distinctive warty appearance, by becoming somewhat sloughy on the surface, and by the warts becoming more solid and smoother in their prominent extremities, so as to resemble fungus hæmatodes, or the fungous kind of cancerous tumours.

I allude especially to the perfectly sound condition of the tibia, because I believe many gentlemen, who saw the leg, were of opinion that the bone must have been diseased, and must have given origin to the tumour. I have placed however upon the table the cast of a case of a prominent fungus of a different kind, which is occasionally formed over carious bone, and which ought to be carefully distinguished from the tumour which I am endeavouring to describe. This fungus grows to the same height as the warty tumour, and resembles it in some measure in appearance, but even in the cast perhaps the difference may be perceived between them. In this exuberant growth from the cancellous structure of a bone, the projections are more like granulations; they are softer and redder than the warty tumour, and none of the peculiar changes in the skin around can be detected, which, I believe, uniformly precede the growth in question; on the contrary, the circumference of the diseased parts has the appearance of a common ulcer of the skin, and if the carious part of the bone on which the prominence depends be carefully dissected out by the chisel, the ulcer in the skin will readily heal.

But while I wish to assert the origin of the warty tumour from the texture of the skin, I am perfectly aware that a disease of some bone may be *added* to the alteration of the skin, as was shown in the last case, or as the following case may also prove.

Case IV.

John Colley, æt. 45, was admitted into St. George's Hospital, July 10th, 1833, under the care of Mr. Babington.

About twelve years ago he cut the heel through the tendo Achillis so deeply as to expose the bone. The wound healed in three months, but the ankle and instep have, since the accident, continued stiff, and nearly inflexible, though he could walk about without pain. About two years afterwards an ulcer formed over the outer ankle in the cicatrix, which sometimes almost healed up, but has never completely cicatrized.

On his admission, a warty ulcer existed around the heel, at the bottom of which some bone could be felt. The tibia was also enlarged, and the joint stiff.

The leg was amputated July 25th, and although there was in the following month some pain in the stump, with prominent granulations, which excited some apprehension of the sore having been really cancerous, and about to reappear in the wound, yet he finally left the hospital October 8th, with the stump almost healed, and is now in better health than he had been for some time before the operation.

On examining the ankle, the bone of the heel was found inflamed, and rough and scabrous, as in common inflammation, but without any appearance of the disease having caused any other alteration of its structure.

It appears then that the tumour may be easily and safely removed from any part of the body. In the leg, indeed, the removal of the whole limb must generally be preferable where the tumour is at all extensive; but if its size admits of excision, there need be no fear of the disease being re-formed in any texture except the skin. Still, however, if there be any doubt whether the bone below may have become carious, or otherwise diseased, from the proximity of the tumour, a portion of it may be taken away without adding to the length of confinement.

Case V.

James Calleott, æt. 49, was admitted into St. George's Hospital, May 28, 1828, under the care of Sir Benjamin Brodie.

He had a yellow, wart-like fungus, about the size of a crown piece, which rose above the skin, and through which some bone was felt; this was situated in the centre of some old cicatrices. He had received a blow on the shin from an anchor twenty-seven years previous to his admission, which was followed by a large abscess, out of which some dead bone had been taken while in a naval hospital, after which the wound healed. Fourteen months ago he received another injury, which was also succeeded by an abscess, at the bottom of which the bone was exposed. The exposed bone was believed to be dead, but as it was not loose, he left the hospital till it was in a fit state to be removed; soon after this the fungus formed, and he was readmitted, when the tumour seemed to be connected with the bone or the periosteum, or both. June 5th, the tumour being removed with the periosteum, to which it was fixed, a portion of the bone which seemed to be more vascular than usual was taken away with the trephine, so as to expose the medullary canal. The vascularity did not extend more than a quarter of an inch in depth, and the bone was not otherwise altered. The wound healed well, and the man has since continued free from disease.

There can be no doubt that the removal by the knife is far more effectual

than any attempts to destroy it by caustics, since the whole thickness of the skin requires to be removed, and the action of causties is too uncertain to lead to any reliance upon them. Experience shows the same thing with regard to the much smaller tumours, producing phagedenic ulcers of the face in elderly persons, which, though sometimes destroyed by the use of caustic, are often irritated, and made to spread with increased rapidity, where the caustic has been insufficient entirely to destroy them.

Case VI.

I have placed before the Society a preparation, taken from a man whose leg was amputated for this disease in St. George's Hospital, by Mr. Gunning, when I resided there as house-surgeon in 1823. The disease originated in the cicatrix of a gun-shot wound, received many years previously. In this case very fair and repeated attempts were made to destroy the disease by potassa fusa, nitric acid, and the actual cautery, but without any avail. I injected the limb after its removal; and the mode of extension by the warty circumference is very well seen, after a more healthy surface had been obtained by one of these means, and it shows the appearance of the disease in its third and last stage, which is as follows.

After the tumour has become solid and prominent, a new action takes place in it, and the tumour ulcerates and sloughs alternately, with a great deal of pain and suffering, and it is destroyed down to its basis, so as to present the appearance of a foul excavated ulcer, except in its circumference, where the skin is raised, thickened, and everted, and from time to time warts are generated, which again ulcerate and slough, till the patient becomes gradually worn out by suffering, but without having at all the sallow and peculiar aspect of a person dying of a malignant disease; and on examination of the body, no disease of the absorbent glands is found, nor is there, as far as I know, any sign of malignant disease in the interior of the body. This termination of the disease I witnessed in the following case.

Case VII.

James Sturgess, æt. 34, was admitted into St. George's Hospital, under my care, January 18th, 1832.

Sixteen years previously he had a severe burn of the back, the cicatrix of which extends from the sacrum to the scapulæ, which remained quite well till about eighteen months since, when what he calls a small pimple appeared, which he picked off, and an ulcer formed which has gradually extended to the present time. On his admission, the tumour, which previously existed,

had disappeared, and an excavated ulcer, about eight inches by six in diameter, was left in the loins, the margin of which excited my suspicions at the time he entered the hospital, and the nature of the disease was soon manifested by the formation of warty projections on the skin.

It is unnecessary to occupy the time of the Society with a detail of the internal and external treatment which was adopted, since temporary amendment only was produced in the appearance of the sore, and only some alleviation of his sufferings. The ulcer was too large for excision, and it gradually spread till it was nearly eighteen inches in its long diameter, and ten or twelve in the other direction. He died, exhausted with symptoms solely of irritation, on July 11th. Even when of this immense size, however, the disease had in no part destroyed the fascia of the back, and, except in one or two places where the sloughing had been most severe, the cutaneous basis of the disease still remained, though very thin.

I shall be glad if the remarks I have thus presented to the Society, enable any surgeon to recognize this disease in its early stage, when it may be removed by the knife, without wasting time in the use of remedies, which seem to exert no substantial influence over its growth, and, if unsuccessful, will do much harm. The excision of the tumour, or warty ulcer, may thus prevent the necessity for the amputation of a useful limb, as in several of the cases I have related, or prevent the patient from being worn out by a disease that might have been eradicated, while its size still allowed of the operation.

If, again, the surgeon has dissected out such a tumour, or has removed a limb, when the tumour was too large to admit of separation, still it will be a great point to quiet his own and his patient's anxiety by a confident assurance that the disease is not in the least malignant, as cancer is malignant, but is on the contrary entirely local in its origin, and does not contaminate even the adjacent parts, except in a very trifling degree, so that no future mischief need be apprehended.*

[*Med. Chir. Trans.*, vol. xix., p. 19.

* It will be observed that the opinion thus expressed in 1833 was qualified before the following Lecture was given in 1841, but this second publication escaped the observation of Mr. Smith, of Dublin (*see* page 167), and of other persons who have subsequently commented on the Paper in the "Transactions."

SUBSTANCE OF A CLINICAL LECTURE

ON

CANCER OF CICATRICES,

Given at St. George's Hospital, May 18th, 1841.

THE subject for to-day's consideration is suggested by the case of a man in Wright's ward, named William Ward, whose limb I amputated three or four weeks ago, as well as by some other cases which have recently been under your notice, as they are instances of a disease that is not commonly understood, and erroneous practice, founded on misunderstanding of its nature, may lead to the cases being trifled with, till it is too late to adopt a successful line of treatment.

This man, Ward, thirty years of age, was admitted into the hospital February 24th, with extensive ulceration reaching from the upper edge of the patella to below the middle of the leg, the surface being full eight inches by five in diameter; in one part, just below the head of the tibia, the ulcer is deeply excavated, from destruction of the anterior part of the bone. A little exposed bone can be felt with the probe, and the leg bends easily at this part; it does not appear, however, that the bone is entirely destroyed, as lateral movement only bends the bone slightly, in comparison with its flexibility in the other direction. The joint does not appear to be at all implicated in the disease. His health has lately declined, and the countenance is pale, but the bowels are regular, and the appetite good; pulse rather quick. He is kept awake by pain, but does not appear to suffer much when the limb is moved or bent.

He states that, twenty years ago, his leg was much injured by being caught in some machinery, after which several pieces of bone came away, but it remained well till the last year, and he was able to use the limb till six months ago, previous to which, ten months before the present time, the skin became ulcerated over the patella, and gradually spread, downwards chiefly, to its present size, the extension below the skin into the bone having only recently taken place. The skin round the ulcer is thickened, and the margin is much raised and hardened, and irregular; and here and there on the ulcer is an imperfect warty appearance, the surface of the ulcer being very red and florid, but being much more irregular and more condensed than common granulations.

The limb was at first placed in a fracture box, and lettuce and opium given to quiet the pain, and a sedative lotion of prussic acid used, which gave much

relief, as it usually does in malignant sores. There being in a few days no doubt of the nature of the case, amputation was proposed to him, but declined.

On the 2nd of April some suspicious enlargement of the glands in the groin took place; but I believe it was only owing to some stimulant having been applied to the sore at one part, the pain from which perhaps contributed to make him at last consent to the only means of cure.

I accordingly amputated the thigh on April 10th, and the stump is now nearly healed, and he has been walking about for some days. The appearance of the disease is seen in the preparations before us; but I will return to that part of the subject presently.

The nature of this case has been described by me in the nineteenth volume of the "Medico-Chirurgical Transactions," in a paper in which I have related the results of several cases, the preparations from some of which are on the table before us, together with several others which have occurred since, and which will serve to show you every stage of the disease, which is *cancer* in the imperfect skin of a *cicatrix*.

There takes place, then, an ulceration or morbid growth in old scars of any character, such as those arising from burns, gun-shot wounds, floggings, or common ulcers.

1. Here is a preparation of an ulcer of this character that I took, three or four years ago, from the back of the hand of a man who had had a sore in this situation for twenty years in the cicatrix of a burn, which extended for some distance beyond the ulcer. It was of the size of half a crown, hard and uneven, with a very tender surface and irregular figure, and in part warty in appearance, with a hot pricking or smarting pain running up the arm. Till the last year it had healed from time to time, but since then it has resisted all applications, and has spread. After trying arsenic and other remedies for a little while, I felt satisfied of its nature, and dissected it off from the extensor tendons, which preserved very fair motion after the wound healed. In this case, then, what had for some time been common ulceration at last assumed a new action; and you may see that, although very little warty on the surface, it yet consists of a great number of tough hard fibres, perpendicular to the surface, which may easily be torn asunder; and the tumour is, in fact, exactly like the hard base of many cases of cancer of the lips.

2. In a further stage, or else anterior to the formation of the hard base of this case, you may see an exuberant growth of firm red warty granulations or fungus, elevated an inch or more above the skin, such as some of you may remember in a man named Gale, who was under my care two years ago with a tumour about three inches long, and nearly two broad, situated on the outside of the leg in the cicatrix of an old and large varicose ulcer, the

tumour having begun about nine months previously, while the ulcer had first formed eleven years before. The tumour was attached to the fibula, but I believed the bone was not diseased below the periosteum, and that amputation consequently was not necessary. I therefore removed the tumour, and scraped off the surface of the bone with a chisel, and after some trouble, in consequence of the hard cicatrix, which extended all round the leg, the wound healed.

3. The disease forms a very considerable sized tumour in some cases, as in these two preparations in which the new growth originated from flogging on the shoulders; or in these preparations from a leg, which I amputated for the disease a few years ago. The tumour in this case extended quite round the leg, and was two inches high, and about four inches broad, and gave excessive pain, having come on a few months before in the cicatrix of a burn, which the patient had had from childhood. Instead of the warty appearance before described, the disease is now, as you may perceive, composed of a firm vascular substance, with round elevations of some size, still capable, to a certain degree, of being torn down in fibres, but bearing more resemblance to a medullary tumour when very vascular. You may see that it only goes down to the fascia and periosteum; even when of this size, the bone, although thickened from inflammation, being still otherwise healthy. This patient at first refused to submit to amputation, but on coming to the hospital one day, I found that she would have the operation performed if I would do it immediately; of course I did not refuse, and I saw her some time afterwards without any return of disease.

When I wrote the paper I have alluded to, I expressed my opinion that the disease was one of a malignant nature, but that it was purely a locally malignant disease, as far as I had seen it, and that if it was of the same nature as scirrhous cancer, it was so in the very lowest degree; that it consisted of a new structure, with the power of contaminating the adjoining soft tissues, and converting them into the same disease, and consequently that its entire removal by the knife, or total destruction by caustic, was necessary to effect a cure; but that the low degree in which it was malignant was evinced by a fatal case I had examined after death, in which, although it had spread so as to occupy a space of eighteen inches by ten on the back, it had even then caused no affection of the absorbent glands, nor occasioned the formation of any morbid structure in other parts of the body.

I remember, when this paper was read, that some gentleman present expressed an opinion that the warty ulcer in question was curable; but, in fact, it is not so; the new growth is incapable, as it would seem, of cicatrising: destroy it as you will to the level of the rest of the skin, yet if any portion whatever of the morbid substance remain, it will soon show its malignant nature again by fresh growth, as in this beautiful preparation,

which I made when I was House-Surgeon here, from a patient whose leg was finally amputated, after all sorts of applications had been tried without success, including several escharotics, and the actual cautery. The peculiar nature of the disease may be sometimes seen in an old ulcer of long standing, in such a manner that only one part of it, or one ulcer out of several on the same limb, may be cancerous, while the rest has the same appearance which it has possessed for years previously.

Rayer, in his excellent work on the Skin, alluding to my paper, or rather to an abstract of it, which he had seen in some journal, supposes the new growth to be an hypertrophy of the papillæ of the skin, whence it derives its warty form ; but this is by no means the case, for it affects, as you may see not the papillæ only, but the whole texture of the cutis ; and the preparations show you how different the tumours are from others of common warts, even when very large and numerous, as in this great mass, which I removed from the labium.

Neither is this disease in a cicatrix like the exuberant fungus you may sometimes see, as in this cast, rising out of the cancelli of a bone when it is carious ; the fungous granulations in such a case being the result of irritation only, and ceasing when the local condition or the state of the constitution are altered for the better.

Subsequent experience in a good many cases has confirmed me in most of what I then stated, but has shown me also that the growth of this kind of cancer in cicatrices is more malignant in its influence than I was at that time inclined to believe, and that it bears much resemblance to ordinary cancer of the skin, of which it is evidently a variety, though still it is less virulent than any other variety of cancer, which I have seen : its mildness depending probably on its being produced at an earlier period in the imperfect structure of an ulcer than it would be in healthy skin, with a corresponding constitutional tendency to the development of cancer on the application of the necessary excitant, and being therefore also less virulent in its contaminating properties on the parts around, or on the glands or system at large.

Cancer, developed even in original sound skin, instead of a cicatrix, is, however, milder in its usual form than is generally imagined, because we are more familiar with it in other textures, in which its rapid growth and fatal influence are strikingly evinced. Cancer of the skin, for instance, is much less violent than cancer of mucous surfaces, although the two textures are so much alike, in their structure and properties. In the penis, or clitoris, or labia, the violent pain, and early influence on the glands, and the frightful sufferings and death of the patient, are very different from cancer, as it usually appears in the skin. You have lately had an excellent example of this in a poor woman named Gaylor, in whom the disease originated in the

vagina and labia, and you saw how the glands were enlarged and ulcerated in the groin, and what numerous cancerous tubercles of a secondary form were developed in the skin of the thighs and adjacent parts. It is curious that cancer of the cutaneous structure should be so mild in the majority of cases, since the skin seems to present so active an absorbing surface for various purposes; yet such is doubtless the fact. Here is a preparation of a cancerous tumour, which I removed two years ago from the skin of the sternum in a patient in this hospital, which shows you the same warty appearance of solid texture formed by the disease in common skin, which our other cases present in cicatrices. In this case the tumour was supposed by the man, who was between forty and fifty, to be a common mole, which he observed twenty years before he came here: ten years afterwards it ulcerated, and did not heal again, and within a few months of the operation it began to be painful, and spread more rapidly. He has remained well, I believe, since I removed the diseased part. In another case an elderly man came under my care with a large cancerous mass of warts in the same situation on the sternum, which had ulcerated about four years before, and on his admission was about six inches long, two broad, and one and a half high, with great pain, and an exceedingly fœtid secretion. I wished to have excised it, and to have scraped off the surface of the sternum, which was superficially affected, but he would not consent to it, though I dare say it would have succeeded, as notwithstanding the size of the tumour and its long continuance there was no apparent contamination of the glands in either case. You have recently seen this tumour removed by Mr. Tatum from the back, which was apparently not in a cicatrix, but yet looks like the later stage of cancer in that variety of disease when it forms the large tumour I have spoken of; but unfortunately in this case the glands were much affected, and the patient has died since the operation.

The similarity of the local appearance of the two forms of cancer is therefore very evident; but when I wrote the paper I have referred you to, I had not seen any cases which showed me, as subsequent experience has done, that there was also so much similarity in their course in other points connected with their malignant properties. First, as to the contamination of adjacent parts. I had seen the disease affect the fascia or periosteum, and then cause enlargement, and thickening, and consolidation, of bone, or some degree of ulceration in the cancelli; but it may do more than this, as Ward's case has shown you, and there may be therefore occasionally some difficulty in ascertaining how much disease in any part is really cancerous, and how much is simple inflammation. You have a few days ago seen the thigh amputated by Mr. Babington, and the case is in many respects so instructive that I will venture to speak to you about it, although not under my own care.

Richard Webb, æt. 54, admitted April 28th, with a scirrhous ulcer of the

right leg. The ulcer is situated a little below the middle of the leg, over the tibia, irregular on its surface, with several prominent warty granulations; a probe passes freely into a cavity in the bone, which is felt exposed, and in one part destroyed entirely through its substance, so that the probe passes to the soft parts posterior to the tibia. The integuments for some distance around the ulcer are slightly thickened, indurated, and of a purple colour. At present there is not much discharge from the ulcer, but when it becomes profuse it is very offensive. Suffers much from sharp shooting pains up the thigh; a gland in the groin is very slightly enlarged and hardened; superficial veins of leg and foot enlarged. States that twenty-one months ago he struck the part (which is now ulcerated) with a hook: the skin was not broken, and he continued to exercise the limb: it soon became inflamed, and extremely painful, and he expresses having felt a "knot growing from the bone." It continued to increase, and six months after the accident it became ulcerated. Since the ulceration has commenced several spiculæ of bone have come away. Ten weeks ago caustic was applied to it, which impeded its growth, but ineffectually. He is unable to stand. The foot is much benumbed. The tibia appears enlarged in the neighbourhood of the ulcer, and rather irregular to within a short distance of the head. Tongue coated. Pulse quiet. General health good. States that forty-three years ago he had an ulcer on the same spot from the kick of a horse, which remained open for two years, after which he remained quite well till the blow on the leg.

May 6th.—The leg was amputated above the knee.

Now in this case the cancerous nature of the surface was evident, and with so much disease of the bone of any kind added to the cancer, amputation was necessary, and with the experience of Ward's case just before, it seemed probable to all of us that the bone in this man also was affected with cancer; but then amputation above the knee is much more dangerous than below it, and it was an important question to determine whether there was room to perform the operation with safety against a return of the disease, if the bone itself was cut across below the knee. Our notes remark that the bone was enlarged and irregular in shape and feeling much above the opening into its interior, and it seemed therefore probable to Mr. Keate and myself that the malignant disease was very likely to extend high within the cancelli: Mr. Babington was less afraid, I believe. Nevertheless you may perceive that in fact the operation might have been done below the knee, as the disease in the interior was in all probability only inflammation ending in abscess and necrosis, with enlargement of the shaft; and the cancerous disease was confined, as it would seem, to the cutaneous texture, where the warty and fungous appearance and its vascularity are as well seen now as when the blood circulated in it. The disease, in fact, is only a little further extension

of healthy inflammation below the cancerous ulcer, like that which, in the person from whom I removed this limb by amputation, had only caused the deposit of an increased quantity of osseous structure. It is indeed doubtful, when all the man's history is considered, whether the abscess and necrosis did not precede the cancerous action, and whether this did not come on in the skin, after the abscess in the bone ulcerated, the malignity remaining throughout confined to the skin. The disease is, in fact, in either supposition, a mixed case: and in another patient, Porter, now in the hospital, with malignant disease of the ankle, you may see that in a cancerous disease beginning below the skin, the ulcer formed in the skin may assume a warty appearance, like that which originates in the cutis.

But now let us return to my own case, that of Ward, and see in our notes and in the preparations what extensive disease may be caused in the bone by cancerous ulceration manifestly commencing in the cicatrix in the skin.

The longitudinal section of the leg shows you how much the skin and subjacent textures are converted into the usual hard fibrous structure of cancer, but you may perceive also at the part where the bone was flexible, that the anterior part of the bone is destroyed, and that the whole cancellous structure is changed into a dense white lardaceous substance, which may be cut with a knife, a few spiculæ only of osseous matter being found in it. The whole head of the bone is changed into this new growth, leaving the cartilage however in its normal condition, and there is no sign of disease in the articulation. You may perceive that the cancelli, as low as where the bone was sawn across about the middle of the leg, have undergone this alteration into a cancerous tumour; in fact, although several inches were allowed below the part where the bone was flexible, yet even lower than this the bone has become diseased, leaving only a few inches from the ankle free from it. In this transverse slice of the lower end of the bone the change is very well seen, as one portion (its posterior surface) is still composed of healthy osseous tissue, while the other two surfaces of the outer shell, and the greater part of the cancelli, are lardaceous and white, and softer than usual, looking like what you may see in a tumour unconnected with bone.

The appearance of the new growth is not however like brain; it is not like a medullary or hæmatoid variety of malignant structure, but is much more like the scirrhous form of carcinoma, using this term in its genuine sense.

In this next preparation cancerous disease of the tibia has gone to a further stage in a man whose leg was amputated by Mr. Walker, and you may perceive that besides the infiltration of the cancelli with cancerous matter, and the absorption of the old bone to make way for the new deposit, there has been extensive destruction in several parts by deep ulceration, forming excavations in the interior of the bone, in a much more marked degree than in Ward. There was some doubt whether the disease might not

have originated in the bone, and ulcerated outwards, into an old cicatrix, the disease then presenting the usual warty growth and fungous appearance of cancer of cicatrices; but if it were so, it equally shows that cancer of a cicatrix is possessed of certain characters, in whatever way it begins, and that both the skin and the bone may be extensively destroyed by ulceration. The patient died of secondary abscesses, I believe, without morbid deposits of cancerous kind in the rest of the body.

Secondly. With regard to the absorption of the poison of the cancerous ulcers of cicatrices. When this patient, Ward, was unwilling to submit to amputation, you will remember that we had reason to fear that the glands in the groin were becoming contaminated, but our apprehensions were probably excited by simple irritation and enlargement, without malignant infection.

The correspondence between cancer of cicatrices and that of healthy skin, as to its effects on the glands, had not been witnessed by me when my paper was written; but I have since then had an opportunity of seeing that absorption does take place, and the case is an example at once of this fact, and of the mildness of the disease, on account of the length of time it had existed before the glands were affected. It happened in one of the patients whose cases were detailed in the paper, a man of the name of Calleott, who was operated on by Sir B. Brodie in 1828, the disease appearing to be connected with the tibia, which had been injured twenty-seven years previously, and having then existed fourteen months. A portion of bone was removed by the trephine along with the cancerous fungus, but it was found to be only vascular and inflamed, and not changed into cancer, as in Ward. The limb continued quite well for nine years, and then broke out in the old cicatrix in the early part of 1837, and he was admitted into the hospital in the following December, under my care, when 60 years of age, with a cancerous fungus of about three inches and a half in diameter, attended with much pain. Amputation was proposed to him, as the bone was felt at the bottom of the fungus; but he preferred trying the effect of caustic first, and chloride of zinc was applied to half of the sore. This was followed by inflammation of the absorbents and cellular texture, and much disturbance of the health, and some weeks afterwards I amputated the leg below the knee. The bone even now was only superficially affected; but on the man's death, from inflammation of the veins, I found several of the glands in the groin enlarged with hard firm white substance, with some of the yellowish deposit in it, which is often found in cancerous glands, and which left no doubt in my mind of their being contaminated by the disease of the leg below them; one of them was as large as a walnut, the others were smaller.

This is, however, the only instance I have seen of the absorbent glands

being affected, out of perhaps some twenty-five cases of the disease, of which I have either notes or a distinct recollection; and therefore surgical operation for the cure of this kind of cancer can be undertaken with tolerable confidence. The occurrence shows the similarity of the cancer of cicatrices, and of the skin; but at the same time it demonstrates their dissimilarity in degree, as infection in the common cancer of the skin, especially when of such long standing, is undoubtedly in a greater proportion of cases than this. How many glands may be affected by common cancer of the skin, you have seen in Mr. Tatum's case, recently operated on, many of the glands of the neck being in that case enlarged, besides some tubercles in the skin, separate from this fungous ulcer which was removed.

Thirdly. As to the general state of the system in cancer of cicatrices. There was no disease found in any part of the body in Callcott, nor in another patient whom I carefully examined after death, with the very large and fatal ulcer which I before mentioned to you; nor, I believe, in Mr. Walker's patient, to whom this limb belonged; nor was there any evidence of local disease, nor of cancerous deterioration of the health, in any of the other patients whom I have operated on, or seen under other surgeons' care. It is probable, therefore, considering the number of cases I have seen, that such an occurrence is extremely rare, and particularly as, even in the more virulent cancerous ulcerations of common skin, the system in very many cases appears not to be contaminated by the local disease. We lost the opportunity, in Mr. Tatum's case, of seeing whether there was any cancerous deposit in the viscera, as, owing to some cause or other, only the head was examined; but I understood there were no symptoms of disease before his death, except in the head, where no morbid deposit was found.

Thus, then, if cancer of cicatrices is so mild in its effects as to be nearly always local—if the glands are only affected in some rare case, and the system still more rarely becomes contaminated, although the disease has extended deeply and largely even into the cancelli of the bones—a cure may reasonably be anticipated in almost every case. But then, again, as the disease is not merely an ulcer of unhealthy character, but is essentially a morbid deposit, capable of spreading into the adjacent parts, nothing short of the entire removal or destruction of every portion of the new growth can produce this cure.

There are but two methods of effecting this object, namely, the use of caustics, or of the knife of the surgeon. Each of these may be applicable in some cases; or where both may be employed effectually, the patient may sometimes have his choice of the two plans. For small portions of the disease, or superficial ulcers, caustic may be employed as safely as the knife, although perhaps with more pain to the patient, whose fears often lead him

to choose the caustic in preference to the other mode. If the thickness is great, the knife, must be much less painful and probably safer, than the use of caustic.

As a general rule, I think caustic is less likely to be followed by inflammation of the cellular tissue, with risk of absorption of matter, and the formation of secondary abscesses, than an operation by the knife. But then, on the other hand, I think you will much more frequently have inflammation of the absorbent vessels, and erysipelatous inflammation of the skin, after the use of strong caustics, than when a cutting instrument is used; so that I scarcely know which is really attended with more risk to the patient from these accidents. When you employ caustic, it must be one active enough to destroy the whole thickness of the disease; so that the actual cautery, or lunar caustic, are useless; even nitric acid will often extend with difficulty through the new structure. Kali purum, or the chlorides of zinc or antimony, may be employed without the risk which attends the use of arsenic; but I think the best of all is the chloride of zinc, which may be proportioned, with a little experience, to the exact thickness of the part to be destroyed in different cases. Sometimes, then, the tumour or ulcer may thus be taken away completely; sometimes, when a bone is exposed, and rough or carious, a chisel will scrape off the surface, without, in its inflamed state, causing the exposed layer to exfoliate; or, if it is too hard for this, the surface of the bone may be touched by nitric acid, when the bleeding has ceased after the operation, exfoliation of course then taking place. Sometimes, again, the disease is too extensive, or too deep, to admit of removal without amputation of the limb in which it is situated.

[*Med. Gazette*, vol. xxviii., p. 872.

CANCER OF CICATRICES.

To the Editor of the Dublin Quarterly Journal of Medical Science.

DEAR SIR,—The last number of the "Dublin Quarterly Journal" contains some observations by Dr. Smith upon the "Warty Ulcer of Marjolin," and also upon a paper of my own on the "Warty Tumours of Cicatrices," the latter having been published in the Medico-Chirurgical Transactions, in 1833, without any knowledge on my part of the remarks written by Marjolin, in 1828, till Dr. Smith did me the favour to send me his own paper a few days ago. My oversight is, however, rendered somewhat excusable by

Dr. Smith having in a similar manner overlooked a supplementary account of this disease afforded by a clinical lecture given by me at St. George's Hospital in 1841, and published in the "London Medical Gazette," vol. xxviii., p. 872; and I am happy to find that the result of my subsequent experience therein detailed agree so completely *by anticipation* with Dr. Smith's observations, that if he had happened to meet with it he would have found it unnecessary to publish his recent paper.

I beg to refer to this lecture for my detailed account of the disease, but venture also, in consequence of Dr. Smith's paper, to make the following observations.

In my original paper, alone referred to by Dr. Smith, I said that this form of warty ulcer appeared to be a purely local malignant disease; but in the lecture I remarked that "subsequent experience in a great many cases has confirmed me in most of what I then stated, but has shown me also that the growth of this kind of cancer in cicatrices is more malignant in its influence than I was at that time inclined to believe, and that it bears much resemblance to ordinary cancer of the skin, of which it is evidently a variety, though still it is less virulent than any other variety of cancer which I have seen, its mildness depending, probably, on its being produced at an earlier period, in the imperfect structure of an ulcer or cicatrix, than it would be in healthy skin, with a corresponding constitutional tendency to the developement of cancer on the application of the necessary excitant; and being therefore, also, less virulent in its contaminating properties on the parts around, or on the glands and system at large."

It will be observed from the latter part of this quotation that I do not agree with Dr. Smith in thinking that the "warty ulcer of Marjolin" and the "warty tumours of cicatrices of Hawkins are *precisely* the same;" they are both cancerous, but modified to a certain extent by difference of texture. I have described in this lecture the extension of the cancerous deposit into the cancellous structure of bones in cases which I had amputated, which I had not witnessed when my first paper was written, and have said that, in this texture, as well as in the natural skin, "it is not like a medullary or hematoid variety of malignant structure, but is much more like the scirrhous form of carcinoma, using this term in its generic sense.

I have also pointed out, as Dr. Smith has done, the occasional but very rare occurrence of glandular contamination, the instance related in the lecture being one of the very cases published in my first paper. A man, whose tibia had been injured twenty-seven years before the appearance of the cancerous ulcer, was operated on by Sir Benjamin Brodie in 1828, the ulcer and a portion of the tibia being excised; nine years afterwards the disease returned in the same part; and in 1838, having, at his request, tried escharotics

ineffectually, I amputated his leg; and, the patient dying of phlebitis, I found several glands in the groin evidently enlarged to a small extent from deposit of cancerous matter.

Rayer, alluding to my paper in the Medico-Chirurgical Transactions, in his excellent work on cutaneous diseases, speaks of this affection as simple hypertrophy of the papillæ of the skin, not being aware of the cancerous nature of the wart, shown by this contamination of the glands; for, as Dr. Smith has observed, the microscope does not demonstrate the malignant properties of this morbid growth.

With regard to the contamination of the general system, I perceive that Dr. Smith's experience corresponds with what I have stated in this lecture. Ulceration of contaminated glands has been observed, indeed, by him, though not by myself; but by neither of us has any morbid growth been seen in any other parts of the body.

I continue to hold the opinion expressed in the lecture:—"If cancer of cicatrices is so mild in its effects as to be nearly always local; if the glands are only affected in some rare cases, and the system still more rarely becomes contaminated, although the disease has extended deeply and largely even into the cancelli of the bones, a cure may reasonably be anticipated in almost every case. But then, again, as the disease is not merely an ulcer of unhealthy character, but is essentially a morbid deposit, capable of spreading into the adjacent parts, nothing short of the entire removal or destruction of every portion of the new growth can effect its cure."

As regards the observations of Professor Wernher, I have only to remark on that part where he states that "I so far *restrict* my first view as that they sometimes assume a true malignant type, most warty tumours being non-malignant;" but in reality I wish to be understood as thinking *all* these warty tumours to be *malignant*, but that very few affect the glands; and therefore I have removed a great many such locally cancerous ulcers in every part of the body, by excision and amputation, with permanent success.

I feel assured, in conclusion, that Dr. Smith will be glad to find that my observations, published nine years ago, correspond so completely in every part with those he has himself published in the last number of this Journal.

I am, DEAR SIR,

Faithfully yours,

CÆSAR H. HAWKINS.

Grosvenor Street,
August, 1850.

[*Dublin Quarterly Journal*, vol. x., new series, p. 232.

SUBSTANCE OF A CLINICAL LECTURE

ON

CHELOID TUMOURS,

Given at St. George's Hospital, May 25th, 1841.

I HAVE recently brought under your notice the subject of cancer of cicatrices, and I have been asked by several gentlemen whether two other cases of disease of the skin, now in the hospital, are also of a cancerous nature. In fact, however, they are examples of a rare disease, of a perfectly different character from cancer; innocent in its nature, but very curious in many points, and, moreover, generally incurable. It was described, I believe, first by Alibert, under the name of caneroides, in some of his works; but the best description of it is by Rayer, in his admirable work on the Skin, who has adopted the Greek term, *cheloid tumour*, from χηλη; both names having the same meaning, and arising from little prolongations of the tumour, like the crab's claws.

The term caneroid tumour seems very objectionable, however, as it would mislead you with regard to the nature of the disease, since we already have the name of cancer, signifying the existence of a similar fancied resemblance, although, as I have said, the two diseases are perfectly dissimilar in their nature. The difficulty of all verbal descriptions is shown by this very term, as it has led to a singular collection of cases under this name, by Dr. Warren, in his book on Tumours, which I see in your hands occasionally,—this gentleman, having grouped together, under the name of caneroid tumour, not only the disease that Alibert meant by it, but also the common spider nævus, and cases of fungus hæmatodes with extensive disease of the glands!

In fact, the irregular prolongations in question are by no means universal,—perhaps even not so common as the oval or quadrangular figure in the two cases in the hospital at present. I have seen it in a marked degree in one case, a little child, five years old, who had suffered from small-pox, and some weeks afterwards two or three of the cicatrices became affected with some new action, with much heat and pain; in consequence of which a reddish growth formed in each place of the skin, rather more than a quarter of an inch high, the centre being perhaps three-quarters of an inch broad, with three or four prolongations from it of about half an inch more, each gradually ending in the healthy skin. This was an example of the disease in a more active state,

with much more vascularity of the new growth than in the two cases before us, which are the more common chronic character.

The term cheloid tumour means exactly the same thing as the cancroid growth of Alibert; nevertheless it does not seem so objectionable as the other, as the difference of sound from the term cancer previously in use is less likely to lead to confusion by the different morbid growths being confounded together.

One of the cases now in the hospital is that of Mary Moody, æt. 25, who was admitted under my care last week, May 19th. This young woman has several flat elevations of the skin of the left breast, which altogether cover nearly all the upper half of the gland: they are painful, especially when handled, and the whole surface of the mamma is tender when touched. The tumours are somewhat oval in shape, and from half an inch to an inch and a half in diameter; and there are five or six of them. She says they first made their appearance two years ago as "little knobs" in the skin, which after a time ulcerated, and since that time they have occasionally ulcerated slightly, the last time being three or four months ago. They are of a whiter colour than the rest of the skin, and firmer in texture, and are elevated about a line only above the general surface. The pain in these tumours is such as to keep her awake at night. Her countenance is pale, but she appears to be otherwise in good health. Catamenia regular, but profuse in quantity, and the pain is generally lessened at the time of their appearance. She is very subject to hysterical fits, and her whole manner is nervous.—Ordered a sedative lotion of Goulard and laudanum, shower-bath daily, and a mixture of decoction of aloes and spirit of ammonia and assa-fœtida three times daily.

The other case now under our notice is a patient of Mr. Cutler's, of whom I have received the following notes;—Thomas Cradock, æt. 21, was admitted on the 12th of the present month, with a large tumour, of a circular or quadrangular shape, situated about the centre of the sternum: it is somewhat larger than a crown-piece, and apparently is only formed in the skin of the part. It is elevated about a quarter of an inch from the surface, and it has an abrupt margin; it is of a somewhat reddish colour, some parts, however, being whiter than the rest, and the surface is a little corrugated and irregularly depressed, though nearly flat over the whole. There is another smaller tumour near it, of similar nature, forming an oval prominence, half an inch in length, with the skin wrinkled over it. He complains of much shooting pain in these parts. He states that the larger of these tumours has existed for about ten years, and that he received a kick from a horse on the part a short time before it formed. He has had it twice removed, the first time by ligature and afterwards by caustic, but it never was so large as it is at present. You saw them removed last week (on the

20th) by Mr. Cutler, by an incision including an oval piece of skin with both tumours, and the edges were then brought together by suture. The appearance, on a section of the part, is before you.

Some gentlemen present will perhaps remember another case, that of a little girl, who was operated on by Mr. Babington, about two years ago, I think. She was about 12 years of age, and had been burnt on the abdomen when young. A year before her admission, two points of skin, about four inches apart, began to grow in the cicatrix, and formed ultimately two tumours, about an inch and a quarter long and half an inch wide: they were smooth, and nearly of the natural colour, or a little redder, and elevated about three lines; and they felt very hot and tender to the patient. Mr. Babington removed them by incision. Whether they returned again I know not; but it is not always quite fair to presume that a disease has not reappeared when the patient has not presented himself again to notice.

Rayer says, the cheloid tumour does not ulcerate; but Alibert's observations were different; and you see in my patient that there has been superficial ulceration, though it is now healed; and, in another case, I have known the ulceration to remain for a great length of time. This was in a woman, 30 years of age, who was sent up to me from a distance in the country, with very extensive ulceration over the skin of one breast, and the chest above it, in a considerable number of what I believe to have been these flat cutaneous tumours. They had begun eighteen months before I saw her, after a blow, and an issue had been made for them, the ulceration having spread over them afterwards. I saw this woman last autumn in the country, nearly three years after she was in the hospital, and although much better, there was still some ulceration, and several tumours now cicatrized. This woman had the same hysterical constitution and acute sensibility of skin that my present patient possesses. She suffered such intense pain that she begged to have the breast amputated, which I did not choose to do; indeed, the disease had spread to a considerable distance beyond it. The irritation of the ulcers had at that time caused some enlargement of the axillary glands; but, although supposed by herself to be cancer, the disease had no one point of resemblance, except the intense pain. The ulcers themselves were much more like the raw surface of ulcerated condylomata.

Such, then, is the history of five cases of this disease, which I have seen, and I think there were some others previously which I did not then distinctly recognize: some of you have also seen three instances, and all of you two cases of this rare disease; of which Alibert only appears to have seen eight cases, when he wrote his description of it, to which Rayer has added five more, which he had witnessed; and, to make the subject clear to you, I will next give you a short general account of the cheloid tumour, including some points of their observation, as well as my own.

The *appearance* of the tumour is that of a simple elevation of the skin, of a pale red colour, sometimes more vivid than in either of the two cases you have seen ; and the vessels on the surface are somewhat larger than in the adjoining skin, and by their alteration, from heat or excitement of any kind, the appearance of the tumour varies from time to time. You may see some white lines running across the elevation, giving it a shrivelled aspect ; and if it has diminished in size, the whole growth looks not unlike a tough cicatrix, as in this plate of Rayer's, in which the tumour arose in a scar. The tumour is fixed and firm, and resisting to the touch, especially if it is on the increase ; the surface is flat, or a little depressed in the centre, if stationary, and more elevated and round if it is increasing ; and if there are more than one, you may often perceive one elevated and smooth, while another is wrinkled ; or opposite ends of the same tumour may present these different appearances.

The *shape* of the cheloid tumour may be round or oval, or quadrangular, or very irregular ; and the prolongations from the body or angles of the tumour, from which it derives its name, two or three perhaps in number, are very irregular, being straight or curved, and gradually ending in a point, or ceasing more abruptly with a smooth round extremity. These claws, or branches, sometimes lie under a considerable portion of the thickness of the cutis, having the appearance of a guinea-worm or other solid body under the skin, giving you the appearance you saw in the smaller and more recent of these two which Mr. Cutler excised ; and the epidermis in this state of tumour may be in little scales on the surface.

Their *number* varies, being single, or double, or perhaps there are several in the same person ; if there are one or two they are sometimes quite distinct, though near each other, as in Mr. Cutler's case ; or, if numerous, they may be partly confluent, as in my own patient ; and they may be several inches apart, as in Mr. Babington's little girl.

The *symptoms* they produce vary from a sense of heat or itching to intense pain, which is described as of a burning kind ; and this may be so great as quite to affect the health, especially if there is the additional hysterical pain of the skin, as in both my patients, in whom the breast was the seat of the disorder ; in the present one you find frequent fits of convulsions, and excessive tenderness both of the tumours and around them. This pain is made worse by increase of the circulation, as by exercise, or friction, or by agitation of mind, or by menstruation commonly ; but, in our present female patient, it is lessened at those periods. In the young man the pain is not near so great ; and sometimes the tumour will be quite indolent, so as to occasion hardly any pain whatever.

The *sex* of the patients is, according to Alibert, generally female, and hence he calls the disease a disorder of the absorbent system ; (how the fact would prove this, however, if true, I know not ;) Rayer, on the contrary,

saw the cheloid tumour in four men, and only one woman ; for myself, I have seen it in two women and one female child, in one man, and in a child, whose sex I do not remember. Probably both sexes, therefore, are nearly equally liable to it ; and Rayer says it is in persons of lymphatic temperament that it takes place.

With regard to the *age* of the patient, Rayer says that he has not observed it previous to the second dentition ; and that most of the patients whose cases had been published were adults or aged persons. I have seen it at the age of 12, and in one child at 5 ; consequently before the second dentition was over, at all events—supposing it to have commenced. The young man is 21, the female 25, and another 30 years of age. Perhaps, therefore, it might form at any age.

Next, as to their *situation*. Alibert says they occur almost always on the sternum ; six out of his eight cases having been thus formed ; Rayer also had three cases in the same situation ; the other two being on the buttock and the face, and Alibert's on the face and the neck. Out of the five cases that have fallen under my notice, one was on the face and forehead, another on the abdomen, two on the breast, and one only on the sternum : one of those beginning on the breast subsequently spread a little beyond it on the chest.

Next as to the *causes* of the disease. In the young man the tumour is ascribed to the kick of a horse ; in the woman, to a blow ; and in my other female patient, from the same cause. It arises also in the cicatrix of small-pox, or of a burn, as the other two cases show you ; or probably from any exciting cause in which the skin is altered ; and sometimes they would appear to arise without any obvious cause.

Their *progress*, when once formed, varies much ; sometimes they slowly and uninterruptedly increase, and alter their shape by irregularity of growth, or by sending out their characteristic branches ; sometimes they grow to a certain size, and then remain stationary ; occasionally, as in one case I have seen, they may shrivel and lessen, or nearly disappear, with only the appearance of a scar left in the part. They do not generally affect the health at all as you saw in the young man. In my present patient the health is much affected with hysterical symptoms ; but I do not know that this is directly owing to the tumours. In one of my other cases, the woman's health was obviously much deteriorated by the pain and irritation of the tumours when in an ulcerated state ; and when I saw her again, she had recovered from these effects, the tumours being comparatively indolent nearly three years afterwards. At all events there was no appearance, even in this case, of cancerous deterioration of the system, though some had supposed the tumours to be of this nature.

Little need be said of *diagnosis*, for the tumour is quite peculiar in

appearance. Occasionally, indeed, in an early stage, it may be somewhat like a cancerous tubercle in the skin; but it is redder and more irregular, and less elevated, and its progress soon shows the difference of the cases, the new growth never becoming warty, as cancer of the skin does, nor fungous if it be ulcerated; and the situation of the tumour usually, which is rare for cancer, and the youth of many, would help the distinction, notwithstanding Alibert's perplexing similarity of name. At first sight the tumour might look like a nævus, but its firmness and flatness, and want of vascularity, will directly show the want of resemblance.

In the next place, as to the *texture* and *appearance* of the tumour on *dissection*. No mention is made by Alibert and Rayer of this important part of the history of the cheloid tumour. Before I had seen Rayer's work I had made notes of the appearance of the tumours which Mr. Babington removed, which appeared to me to be formed by the whole thickness of the cutis, thickened and elevated, and with its tissue unravelled, as it were; so that fibrous bands ran in a reticulated manner through the tumour, with the usual cellular appearance of the skin between the meshes, but without any new deposit of any kind in the structure. In these preparations, removed by Mr. Cutler, you may see exactly the same appearance, but somewhat firmer and harder; but in the smaller of the two, in which it may be supposed to be in a very early stage, you may perceive a small oval substance, covered by the outer layer of the cutis, with the cuticle in a natural condition, while the deeper portion of the cutis is also unchanged; the tumour itself, scarcely more than the size of a large pin's head in diameter, is therefore in the central part of the cutis, and consists of the intermediate layers of the cutis, scarcely distinguishable from the rest after maceration, except by a little greater hardness.

Microscopical examination shows that this portion possesses the same appearance as the ordinary texture of the skin in its normal condition. I requested Mr. Toynbee, who is more used to the microscope than I am, to examine sections of each of these tumours, on the day they were taken out, without telling him what they were; and his note to me says:—"I have examined with care the specimens that you brought me, but I fear that at present the microscope will not throw much light upon the nature of these morbid structures. 1st. The two smaller slices (taken from the larger tumour) appear to be composed of delicate cellulo-fibrous tissue, among which very few cells can be traced. 2nd. Sections of the growth in the integument (the small recent tumour) present also a very fine lax tissue, in which are interspersed nucleated cells," I fear this does not enlighten you much. In fact, hitherto, the microscope does not seem to have shown much more than the naked eye can perceive; and sometimes it shows even less distinction between natural and morbid tissues; referring them all in-

discriminately to nearly the same elementary parts. Such, at least, is the impression with which one rises from a perusal of Müller's recent researches on the intimate structure of tumours.

The *nature* of these tumours appears to me, therefore, to be little more than *simple hypertrophy* of the skin, in which the texture is unravelled, as it were, in the way that you may see in many cases of anasarca; only, instead of mere serum, you have a more organized deposit in the interfilamentous parts. If the hard bands and growths of burns are taken as analogous to the cheloid tumour, but in a more active state, you have some confirmation of this opinion, since these substances are not mere contracted cicatrices, as you might imagine from some descriptions, but actual morbid growths, which occur on the surface without any contraction, and increase to a great thickness, and which are yet only a vascular hypertrophied condition of cutis. The cheloid tumour is perhaps most like a chronic and hardened condyloma; only the latter affect the surface of the cutis, and are generally deprived of cuticle, and moist, because they occur only where surfaces are kept moist and in contact; as in a girl in the hospital some time ago, who not only had them in the usual situations, on the labia and thighs, but had great masses also in the axillæ and umbilicus, where the secretions were retained.

One might almost take warts, condylomata, and cheloid tumours, as different degrees of similar enlargement, according as the papillæ chiefly, or the outer surface, or the whole thickness of the cutis, were the seat of the hypertrophy; allowing, also, for different degrees of moisture and rapidity of growth; or you might almost add the Barbadoes leg, and tumours of the scrotum and labia of the same disease, in which the subcutaneous tissue is also diseased; while the growths of burns give you analogous hypertrophy of the new tissue of cicatrices in a state of mere inflammation.

It would thus appear, as in all simple growths of natural tissue, that the cheloid tumour is innocent in its character, and is only a chronic tumour of the cutis. Alibert supposes it may be intermediate between dartre and cancer, possessing the scaliness of the one, and the pain of the other. The two diseases (if so unmeaning a term as dartre be used) have, however, nothing whatever in common, nor the cheloid tumour with either; unless, perhaps, some cases of mild superficial cancer of the skin have been confounded with the cheloid tumour, for one plate looks very like ulcerated cancer of the skin.

Such, then, being an account of this rare and singular formation, let us next consider the treatment applicable to it. And if it be, as I suppose it is, innocent in its nature, there is no harm in trying to relieve or cure the complaint; it is not, as in cancer, that you thus trifle away the time, till the opportunity for operation has gone by.

a. An operation for its removal by the knife frequently fails. I do not

know the results in Mr. Babington's case ; so we will hope that it is cured, as the girl has not returned. The tumour in Mr. Cutler's case was of a large size, and was therefore, very proper for removal, especially as the ligature and caustic had previously been tried ineffectually. But Alibert and Rayer both speak of the tumour generally returning after it has been excised; perhaps, therefore, it may again come back, as it has twice before. In one case published by Dr. Warren he has given a plate of this curious circumstance—that after the removal of one tumour of this description, seven fresh ones made their appearance ; namely, one long one in the central line of the incision, and six others of a smaller size, representing the apertures made by the ligatures that had been used in the previous operation.*

It is not very surprising that a disease, which is yet not malignant, should thus return, since we find warts in the same manner very difficult to eradicate, and their own secretion seems capable of propagating the formation; there is a disposition in the texture of the skin, or in the constitution, for them to grow frequently, and in great numbers, and at last, perhaps, they cease altogether in some unaccountable manner. This tendency to reproduction in the cheloid tumour shows us, however, that when we operate we should do so freely, with a good deal of surrounding skin. Dr. Warren says that, in one case, in which great attention was thus paid to the operation, the tumour was finally eradicated, although it had repeatedly returned before, after less skin had been removed.

b. Probably we have the same choice between the knife and the caustic that we have in cancer, but you perceive that it has been used ineffectually in Mr. Cutler's case, as well as the ligature, which last seems to be a bad way of operating in any case. Circumstances may render either the knife or caustic preferable to the other in particular cases, but if caustic is employed, it must, of course, from the structure of the diseased part, be so applied as to destroy the whole thickness of the cutis, and act a little beyond the tumour itself.

c. But the removal of the whole diseased structure, either by operation or by caustic, is not always practicable ; in my present patient, for instance, and in a previous one, where the skin of the breast was affected, the diseased structure was much too extensive for removal, unless in some worse disease than this is, in which, as in cancer, severer plans may be justifiable. It has been observed in some rare cases that the new growth has ceased to increase, and has shrivelled up, and almost dispersed of itself. It is possible that we may sometimes imitate this natural cure, by some applications of astringent qualities, which may dry up the surface, as it were, without inducing ulceration or sloughing, of which a strong solution of sulphate of zinc is one of the

* We understand that it is already beginning to grow again (Aug. 20), and that there are the same appearances in each of the punctures of the needles as in Dr. Warren's case.

best. In the child in whom it took place after small-pox, I believe that much good was done by a strong solution of lunar caustic, and, perhaps, nitric acid, sulphate of copper, and iodine, with iodide of potassium, may each act in strong solution in a similar manner, being applied with a brush, and immediately dried again, leaving the surface corrugated; or, perhaps, lunar caustic in substance, applied so as to make a dry thin eschar, may answer the same purpose. In the acute thickening of burns, I have often known the new growths checked, and the pain immediately relieved, by the continued application of oil to the surface, by means of a piece of lint; and perhaps this may have some influence also on the apparently analogous growth of the cheloid tumour. I learnt this first from a patient in whom several points of painful growth and contraction were taking place on the neck and chest, and to whom some friend had recommended neatsfoot oil. I thought any other oil would produce the same influence, which I have found in reality very beneficial, and so I understand some of my colleagues have also done since I tried it, when the cicatrices were painful and increasing.

d. In the painful or in the ulcerated state of the tumour, I presume the ordinary applications useful in ulcers will promote cicatrization, and act as sedatives. I have ordered for this patient of mine, a strong solution of goulard and laudanum, which, in the few days she has used it, has given some relief. A lotion of prussic acid will probably do the same. The various ointments of iodide of lead, or mercury, may be tried, or lotions of mineral acids, or black wash, or simple lime water, or the different preparations of zinc, and so on. In our patient, ulceration has several times returned after the surface had quite healed: and such was the result in the other ulcerated case.

e. It does not appear that internal remedies are likely to be of much service for this local growth. Rayer does not appear to have made many trials to cure the disease, either by local or general remedies; but Alibert made numerous attempts to do so, he tells us, but found them all fail. In this patient I have ordered assafœtida, and the shower bath, and purgatives, with a view to her excessively nervous temperament, and hysterical fits, and the latter symptom is already better. In the other woman, I have learnt that her usual medical attendant, partly by my advice, has tried various means, both before the short time she was under my care, and subsequently —sarsaparilla, and other tonics, and alteratives, and purgatives, oxymuriate, and other mercurials, and iodine in some forms, but at the end of above four years, the disease remains, though the general health has much improved, and the ulceration and local suffering have proportionately lessened. It is probable that there is no specific, either local or general, for the complaint, and that the ordinary rules of attention to the health may do some little good, but cannot effect a cure.

f. It will remain, then, for us to endeavour to soothe the state of the patient, and relieve the pain, and perhaps in some measure check the disease, and improve the general health by some of these means I have spoken of; and that we should seldom have recourse to operation, as being not often necessary for a non-malignant disease, and also because experience shows that it has generally failed; and, finally, that if we do have recourse to the knife, or to the use of caustic, they must be employed so as to destroy the whole disease in a free manner.

[*Medical Gazette*, vol. xxviii., p. 919.

CLINICAL OBSERVATIONS ON CANCER.

1. Cancer of Breast, &c.—2. Cancer of Uterus.—3. Cancer of Lip.

1. THERE is scarcely any subject, perhaps, which, considering the present state of surgery, is so little understood, as to its causes and different forms, as cancer. It is, indeed, but a few years since all hard swellings of every sort were classed together under the name of scirrhus; and this term being also used for the early state of cancer, a confusion was introduced which led to the consideration of every hardness, even the most innocent, as a malignant disease. Nor is the distinction even now understood on the Continent, for you will find persons of eminence removing the neck of the uterus, for what they call scirrhus of that organ, in young women of 18 or 20, some of whom have subsequently borne children; the real disease having, of course, been only that hardness which is produced by inflammation, and which is perfectly curable without such an operation as this.

Much progress has, indeed, of late been made by the distinction between the class of fungoid tumours and cancer. Tumours which were at first called soft cancer by many surgeons, and which were supposed by Sir Everard Home to be cancer of muscular structure, but which are now understood to belong to a distinct genus, having at least three different species—the melanoid, hæmatoid, and encephaloid. Cancer and fungous tumours are, indeed, allied to each other; so that the two structures may be found together, or a tumour of one kind removed in any part may be followed, in the same place, by another of the opposite kind. Even the local cancer of the scrotum may be succeeded by fungus hæmatodes; for a case of chimney-sweepers' cancer has been published by Mr. Langstaff, which was operated upon, and the patient died with fungus hæmatodes of the os innominatum and lumbar glands and liver. Still, notwithstanding their alliance, there are many

particulars, besides their structure, in which the two kinds of disease differ materially from each other, and which influence our practice. It is to British surgery exclusively that we are indebted for this distinction (and especially to the labours of Hey, and Abernethy, and Wardrop); a distinction which is even yet so little comprehended by our Continental brethren that a common vascular nævus is called by the name of "fungus hæmatodes," —the only point in common being the liability to hæmorrhage.

But while a good deal has been done with regard to fungoid diseases, much less progress seems to me to have been made in our knowledge of cancerous complaints, though there are, probably, at least as many species of cancer as of fungus, differing from each other in their origin and appearance, in their symptoms and progress, the course of which ought to be distinguished from each other, as requiring a different line of treatment: some cases being attended with much new structure, others with scarcely any tumour; some being extremely painful, others causing very little suffering; in some the constitution being highly impregnated with the poison, in others the disease seeming nearly local.

You may have watched with advantage the case of Sophia Green, with cancer of the breast; in whom an immense mass of hard tumour involves the gland and all the neighbouring structures, the skin is studded with numerous cancerous tubercles, and the glands, both in the axilla and the neck, are enlarged with the same disease. You have seen her suffering in the most frightful manner, from pain in the tumour, which is extensively ulcerated, sloughy, and bleeding. You see her exhausted and nearly dying, chiefly from incessant vomiting and obstinate constipation, making it not improbable that some part of the alimentary canal is obstructed with a cancerous tumour; and from some symptoms of incessant pain in the neck and head, and inability to move her head without holding it with her hands, it seemed, at the time of her admission, not unlikely that even the vertebræ of the neck might be affected with the disease.

[This woman was examined after the lecture, as Mr. Hawkins found that she had died on the preceding night, and besides the local disease mentioned in the lecture, which had softened two of the ribs below it, it was ascertained that there was a tumour in each ovarium, consisting of several cysts of fluid, communicating with the fallopian tubes, which were distended with a brownish semi-fluid substance, while the uterus itself was healthy. These tumours, filling the brim of the pelvis, pressed upon and obstructed the rectum, as it lay just in the angle between them. The lumbar glands were also enlarged and pulpy. The fifth cervical vertebra had some irregular bony projections from its body, and in the interior were some cells of bloody fluid, which Mr. Hawkins was inclined to think might be the result of cancer in the bone.]

On the other hand, I had a patient under my care three weeks, for another complaint, before she even mentioned to me that she had had cancer of one breast for twenty years, which had been ulcerated twelve years; so slow had been its progress, and so little suffering had she experienced. Some years afterwards, a similar tumour formed in the other breast, with enlargement of the axillary glands.

2. You have also had the opportunity of contrasting this disease, as it affected the uterus, in two patients, in contiguous beds. In the one, who died very recently, the bladder having been destroyed to a considerable extent before her death, you saw the most dreadful suffering for a long time; her countenance not only showed how acute her pain must have been, but had the exact expression and appearance which cancer usually produces. In the other, Sophia Purchase, who came into the hospital when nearly dying of hæmorrhage from cancerous tumour of the uterus, some months ago, there has been, till lately, scarcely any pain, and her countenance throughout has been calm and resigned, without any other appearance than that of extreme paleness from loss of blood. Now, indeed, she suffers a good deal; but it is not so much from the cancer of the uterus as from the bowels, which are irritated, and in a state of frequent diarrhœa, because the ulceration has destroyed the front of the rectum, and made it one cavity with the vagina.

It is evident, then, that the differences I allude to do not arise merely from the particular organ or structure which is the seat of the cancer, since the course of the disease is so different in the same organ. Neither does the degree of pain depend on the mind and temper only, though, no doubt, this is capable of producing some difference; nor does the different progress of the complaint arise merely from an original difference of constitution, though some influence is probably derived from this circumstance also. What I wish you to understand is, that in the same structure (the breast, for instance, where you can most easily watch its course), and in persons apparently of the same constitution, you will meet with four or five different kinds of cancerous tumour; so that, if you see any one of them in its early stage, you can anticipate, to a certain extent, what will be its course, its appearance at another period, its comparative rapidity, or its influence upon the system; so that you will be guided by this knowledge in having recourse to an operation, or abstaining from it.

At the same time, you are no doubt aware that malignant diseases are really much influenced by structure and texture, some parts being, for instance, more liable to one form than the other; so that cancer is common in the breast, and fungus hæmatodes rare; while, on the other hand, fungous diseases of the testis are frequently met with, and cancer is scarcely ever seen in that organ. So again, fungus hæmatodes of a muscle, or other soft texture, runs a somewhat different course from the same disease in a

bone; and cancer is modified according as it occurs in the breast, or stomach, or uterus. In the skin especially, you will see in general a considerable difference in its appearance and progress, and degree of malignancy, from cancer in other parts of the body; and even different parts of the skin seem to be to a certain extent, differently affected.

3. I now proceed to the subject of *cancer of the lip.*

This disease commences by a small tumour in the substance of the lip, insulated, hard, and attached to the skin, which forms a part of it; or it has sometimes the appearance of a small tubercle confined to the skin, and not projecting into the texture below the skin; and it is generally situated close to the margin of the lip. This becomes chapped and ulcerated after some time, or the surface looks simply excoriated, and frequently scabs over, till at last a florid ulcer is established, with a central slough, and surrounding hardness. You may see the early appearance of the tumour in this plate, which I took from a patient, Jane Nevin, aged 45, who was admitted into the hospital April 10th, 1833. You see a small, circular, projecting tumour, partly on the skin and partly on the red portion of the margin of the lip. It has a small, deep, excavated ulcer in the centre, discharging a purulent fluid, and readily forming scabs, around which there is a prominent hard margin of the same colour as the skin. I performed the usual operation on the 25th, and she left the hospital cured, I hope permanently, on the 8th of May.

I recollect there was in this case what I have sometimes observed after the operation for cancer of the lip, severe pain for some time afterwards in the cicatrix, described as of a lancinating kind, and similar to that felt before the operation, making the patient and the surgeon also sometimes imagine that the disease is about to return. Not long since a woman was sent to me by a friend and former house-pupil of mine, on account of similar pain, after he had operated on her in the country. Such pain as this I am alluding to, comes on two or three weeks, perhaps, after the removal of the cancer; and it is like that often felt after a burn or other ulcer has healed; and it disappears again in a short time with a little strong goulard, or other simple application.

A second stage of the disease was shown you in William Staunecnott, admitted into the hospital July 2nd. You saw in this man an ulcer with hard everted borders, close to the right angle of the mouth, the centre foul and very painful, and discharging copiously; the tumour being altogether rather more than an inch in breadth. Health pretty good. The tumour began about a year ago, and he attributed its origin to smoking; but it only became painful last September, and ulcerated about the same time, since which time it has increased rapidly. Here is the portion of lip, which I removed by the usual operation last Thursday, the 10th, the wound, as you

have seen, being so completely united by the first intention, that you scarcely see where some part of the cicatrix is situated, and with so little alteration of appearance, that the portion of lip is hardly missed. Here, again, is a plate, and the preparation, taken from a patient who was operated on at Christmas last, in which you see the cancerous ulcer in a further stage, nearly the whole lip having, in fact, been removed by operation. The patient, however, as perhaps you have seen, returned to the hospital yesterday, with several glands much enlarged and hardened, with, no doubt, a scirrhous structure, though the new lip is sound.

You have heard my patient attribute his complaint to the irritation excited by his pipe in smoking; and no doubt this is frequently the immediate cause of the development of the disease. I have been asked, however, by several gentlemen, whether the ulcer in this case might not be one simply of an unhealthy character, and not really cancerous. Now there certainly are very often intractable irritable sores about the lips and mouth, and still more frequently, perhaps, on the tongue, excited by the irritation of diseased teeth, or other local cause, which bear much resemblance to the sore of cancer; and I beg to refer you to an instructive paper upon this subject in the Medico-Chirurgical Transactions, by Mr. Earle; it is, I think, in the 12th volume. I believe, however, that you can generally distinguish such cases from cancer without much difficulty. You may perceive, perhaps, the bad tooth, or ascertain the habit of smoking, or of chewing tobacco; and on the removal of the cause of irritation, the sore may heal. Inquire into the origin, and you will find it, from the patient's own description, to have been a chap, or excoriation, or pimple; while in cancer, just as in our present patient, you will almost always find on inquiry that there was a lump or tumour for some months, or even a longer time, before its surface ulcerated and became painful. The irritable sore may, of course, take place at any age, and you can usually discover some derangement of the general health, on which its duration depends, and which you can get rid of by tonics or purgatives, and especially by mercurial alteratives, or arsenic. Cancer of the lip, on the contrary, takes place almost invariably in persons of advanced age, of fifty or sixty; seldom so young as in the patient I first mentioned, where I operated at the age of forty-five; and the patients are almost always remarkable for their florid healthy complexion, and the good health they have previously enjoyed. But further: the different nature of the complaint is at last evinced by the proof of malignancy afforded in cancer, by the enlargement of the glands of the neck, and the morbid poison may be a long time dormant in them, as in the case I alluded to just now; for there, the cicatrix being still perfect, the tumour was doubtless entirely eradicated; yet some months afterwards the glands began for the first time to show marks of the virus, which must have been absorbed previous to the operation.

Cancer of the lip, then, it appears, possesses a third degree of malignancy, rendering the return in the parts around the original disease very probable, producing not unfrequently enlargement of the absorbent glands of the neck, and causing also, sometimes, a similar disease in some other part of the body. Our prognosis must, therefore, be less favourable than in the apparently more decidedly constitutional disease of chimney-sweepers' cancer. I recollect, for instance, the case of a man, who was operated on by Mr. Keate not long since, who had lost one testis and great part of the scrotum forty years before, and whose father also, who lived to the age of seventy-nine, had three several times had a tumour removed—the first when he was quite young, the last by Sir P. Mac Gregor, when I was house-surgeon at the Lock Hospital, not one of them returning in the same part.

With cancer of the lip, on the other hand, the disease often returns, either in the part or in the glands. Still the chances are such, that the operation is always proper, even when the disease has made very considerable progress, as the part will readily heal; nor is it to be refused even when some gland is enlarged, though of course, in such circumstances, the gland should be removed at the same time with the diseased portion of the lip.

A man was under my care at the hospital, about a year and a half ago, who had had the operation performed on the lip, in the country, and a gland, which the man said was enlarged at that time, was unfortunately left. The cicatrix of the lip had remained sound, but there was, when received here, a great mass of cancerous glands on one side of the neck, with a large cavity in the centre, bleeding and sloughing from time to time, so as quickly to carry off the patient. When the glands are thus affected, they generally form a tumour, of almost stony hardness, under the jaw, sometimes forming one continuous ulcerative surface, with a cancerous ulcer of the lip; at other times an ulcer separate from the lip. This may carry off the patient rapidly by hæmorrhage and sloughing, or he may sink under irritation, by slow degrees; even the jaw-bone being involved in the ulcer, during which time the patient suffers dreadfully, and the previous healthy-looking countenance is changed into the peculiar expression of malignant disease; or the tumour may press upon the fauces or windpipe, suffocating or starving the patient. There was a curious case at St. Bartholmew's Hospital, in which the patient was at last very quickly carried off, because the cancerous ulcer unfortunately cicatrized a short time before the patient's death, the contraction of which prevented deglutition almost entirely.

The operation which you saw me perform was the usual one of removing a triangular portion of the lip, and then uniting the cut surfaces by ligatures, which I think much better than the hare-lip pins, as exciting less irritation, and causing no puckering whatever of the lip. In this case I removed two ligatures on the second day, and the others on the fourth, and the lip is, as

you can see, quite as good as before. In this way even the whole lower lip, almost from one commissure to the other, may be removed, without deformity, from the readiness with which the chin yields. At the time of his admission, however, I had some thoughts of performing another operation, invented by Dupuytren, which consists of the removal of a narrow slip of the lower lip, of a semi-lunar form, including the disease in the centre, and ending in a point at each commissure, and then gradually raising the skin of the chin upwards, to supply the place of what is removed. I thought of doing so in this case, because near the other end of the lip was a little excoriation; so that if this also was cancerous, the whole lip must have been removed, if the common operation was chosen; but this abrasion readily healed, and was evidently not cancerous, and I therefore returned to the usual method, because I think it, as a general rule, preferable to the semi-lunar incision; though if the sore be very long and very superficial at the margin of the lip, I should then choose Dupuytren's plan. I prefer the other, because there is hardly any deformity after it, and it almost always heals by the first intention, and because, by the usual triangular portion being taken out, you are, I think, more sure of getting entirely beyond the contaminated part of the lip, and the patient preserves completely the action of the orbicularis muscle, which he must in part lose if the other plan be adopted for the removal of a cancerous ulcer of any depth from the margin; so that although the new lip can in great measure retain the saliva, yet its movements must be to a certain degree awkward and impaired. Your choice of operation should therefore depend upon the circumstances of each particular case.

[*Medical Gazette*, vol. xiv., p. 681, Aug. 9, 1834.

REMARKS ON MALIGNANT DISEASES OF THE SKIN OF THE FACE.

Read May 9th, 1837.

The chief object of the following remarks is to describe a peculiar form of malignant disease of the face, which does not appear to have received any distinct notice by surgical writers, although its character is so well marked, as to require a separate consideration. To make myself understood, however, I must, in the first instance, endeavour to describe briefly the more familiar forms of malignant disease, in order to compare the several varieties with each other.

But as the term *malignant* is employed in a very vague and ill defined manner, it is necessary to premise, that it is my intention in these observations, to restrict it to such diseases, as essentially possess a new structure, capable of exciting a poisonous influence in one or more of these several modes; 1st, upon the *neighbouring textures*, which are converted into a substance, either exactly similar, or at least analogous, to that of the new formation; 2ndly, upon the *absorbent system*, so that the nearest glands become enlarged into a tumour like that originally deposited; or 3rdly, upon the *whole constitution*, so that the poisonous secretions of the newly formed part gain access to the circulating fluids, and tubercles of various forms, but of the same or analogous character, become developed in some distant organs or textures, which have no direct communication, except through the blood, with the parts in which the new structure was first formed.

This poisonous influence is equally shown in several degrees, whether the malignant structure be supposed to be entirely local in the first instance, or to be preceded invariably by a peculiar predisposing condition of the whole system; since, even on the latter hypothesis, the secretions of the local tumour still further contaminate the blood, as soon as absorption begins to take place.

By this restriction of the term, we exclude from among the malignant diseases of the face, 1st, the irritable and intractable ulcers of this part, so well described by Mr. Earle, in the 12th volume of the Transactions of the Society; 2ndly, the various forms of Scrofulous Phagedenic Ulcer, or Scrofulous Lupus, which attack the nose, eyelids, and cheeks; 3rdly, the several varieties of Tubercular Sebaceous disease, Tubercular Lupus, Cancer perforans, Noli me tangere, or whatever other name is adopted to designate these destructive ulcerations, which occur in the same parts; and, 4thly, the Hypertrophy of the Skin of the nose, described by Mr. Hey, Civadier, and other writers, and often called Cancerous Tumours, Lupes, Lipoma, and so on, though they have nothing in common with those affections. None of these are malignant in this confined sense, however large may be the tumours of the last named disease, or however extensive and destructive the ulcerations of the three preceding, because the interior of the tumours, and the hard edges, and fungous granulations of the ulcers, contain no new structure, but are a development of the natural textures, with the deposits of inflammation only, incapable of affecting other parts of the body, even when fatal to the lives of the wretched objects, who are victims to these frightful disorders.

I. The class of fungoid malignant diseases, whether in their *hæmatoid*, *medullary*, or *melanoid* varieties, require little notice, since they seldom occur in the skin of the face, except when the constitutional taint has already evinced itself by the formation of a tumour in some other part of

the body. The forms most frequently developed in such cases are the melanotic tubercles, or a soft lardaceous kind of medullary tumour; these are seldom single, like the several forms of cancer, but are in great numbers over the face and scalp, and are too rapidly formed, towards the end of the patient's life, when he has nearly sunk under the same disease in some other part, to occasion trouble in determining their nature. For the same reason, there is seldom time for the processes of softening and ulceration, and fungoid growths; but if these phenomena do take place, they present nothing striking to our observation, beyond what is usually to be seen in this disorder elsewhere.

II. The class of scirrhous, or cancerous complaints, on the contrary, are very peculiar when met with in the face, and differ in many respects from what is usually called cancer, whence has arisen much difference of opinion as to their nature, and whence, consequently, have taken place some errors of practice, injurious to the reputation of the surgeon, and to the well-being of the patient.

Cancer of the skin of the face is presented to our notice in three different forms, of which the most frequent may be called—

1. The *common cancer of the face*, with which, as it shows itself in the lower lip, most surgeons are familiar.

It commences for the most part in the form of a little hard tubercle in the substance of cutis and subjacent cellular texture, with the little ulcer or fissure which takes place in it, covered from time to time with a thin scab. A tumour of this kind I removed from the lip of a woman 45 years of age, several years ago, since which time I have had the opportunity of knowing that no return of the disease has taken place.

To this stage succeeds a deep excavated ulcer, with a foul and painful surface,—or a mass of exuberant granulations, flabby and bleeding slightly. The original tubercle now no longer exists, or is mixed with hardened cellular substance in the neighbouring textures, and some minute scirrhous tubercles are sometimes visible in the muscles around the ulcer. Next, perhaps, succeeds a further stage, the ulceration having spread extensively on the inside of both lips, and having affected the gums and lower jaw, part of this bone being softened and ulcerated, and part exfoliating slightly.

The unfortunate patient is generally carried off by the disease in this stage of contamination, worn out by the irritation of the foul, fœtid, bleeding and sloughing ulcers of the face and glands, or half starved or suffocated from their pressure, the tumour forming sometimes a great mass of cancerous disease, from the jaw to the sternum, with deep excavated ulcers of several inches diameter. In a few cases, however, the poison is absorbed, and the whole system contaminated, so that tubercles of scirrhous or fungus hæmatodes are found in other parts of the body. It is enough to refer to

one sueh ease: a patient who died in St. Bartholomew's Hospital in 1833, with eaneer of the lip, in whom a few seirrhous tubereles were diseovered in the liver, and an immense number in every part of the heart.*

When *common cancer* oeeurs in other parts of the faee, it presents exaetly the same eharaeters; viz., the exeavated uleer, with its hard everted margins and fungous growth, together with the peeuliar sallowness of the countenanee so expressive of malignant disease.

The experienee of every surgeon demonstrates, that although the tumour, or the uleer whieh sueeeeds it, may often be removed with sueeess, yet that a return is frequently to be expeeted, mueh more frequently, for instance, than in the eaneer seroti; and further, that no measure ean safely be trusted, exeept eomplete exeision, sometimes by the hare-lip operation, at other times by the removal of a semi-lunar portion of the edge of the lip, aeeording to the situation, shape, and size of the disease, or oeeasionally by the Taliaeotian method;—and in the rest of the faee, by some kind of operation, adapted to the form and loeal eireumstanees of the part affeeted.

2. The seeond form of eaneer of the faee is one whieh I have been aeeustomed for some years to deseribe under the name of the "eaneerous uleer," or "phagedenie ulcer of the faee of old persons."—Its usual origin, I believe to be a flat brownish tuberele, generally situated in the angle between the eheek and the ali nasi, or in the inner eanthus of the eye, whieh is frequently stationary for a long time before some aeeidental violenee induees ulceration;—this tuberele is softer, flatter, and darker than that of common eaneer, as if it implieated the outer texture only of the eutis, including the eoloured rete mueosum.

The uleer has a dark shining appearanee, with slight elevation of its edges, whieh are jagged and irregular, and the skin around is not thiekened nor inflamed, as in ordinary eaneer, from the uleer of whieh it is also distinguished by the trifling pain whieh aeeompanies it,—by the absenee of hæmorrhage, sloughing, and fungus, and by its very slow progress,—many years sometimes elapsing before very extensive ravages have been eommitted by it, during whieh time the uleer sometimes remains nearly stationary for a time, or beeomes eovered by a thin skin, in whieh the vessels of the subjaeent texture are visible; and in these intervals of rest the new strueture at the edges diminishes in thiekness.

In a ease of this kind a little wart (as it was ealled by the patient) had been uleerated four years, at the margin of the nose, and yet had not beeome half an inch broad, and was only just beginning to uleerate into the nostril. It was my intention to have eut out the diseased parts, and to have brought round a portion of the skin of the faee to supply their plaee, when a severe and

* *Medical Gazette*, vol. xiii., 576.

nearly fatal attack of erysipelas effected a cicatrisation of the ulcer for some time, and successive attacks of the same disease, with domestic circumstances, prevented the operation being performed before I lost sight of her, a few months ago.

[I have seen this patient several months since this paper was read, and the ulcer had made very little more progress.]

While the ulcer spreads gradually, opening into the cheek, or the malar and maxillary bones, or leaves the eye-ball suspended in its socket, with destruction of the eyelids and circumference of the orbit, and partial exfoliation and softening of the bones with which the disease is connected, its difference from ordinary cancer is evinced in the most remarkable manner, by the little disturbance which it causes in the general health, and by the entire absence of contamination, as far as I am aware, in the absorbent glands. It possesses the same degree of power of contaminating the surrounding textures as is seen in the warty or cancerous tumours of cicatrices, which I have endeavoured to describe in the 19th volume of the Transactions, but is perhaps only malignant in this lowest degree, and is, therefore, if it does not affect the glands at all, an instance of purely *local cancer*, which the common cancer of the face, and the cancer scroti are often called, but very erroneously, since they affect both the glands and the general system. At all events, if it ever affects the glands, such an occurrence is very rare, and I have not seen it where the ulcer has existed a great many years, and has destroyed the patient by its local effects.

The slow progress and peculiar appearance of the ulcer have sometimes led to the disease being called *lupus* or *lupoid tubercle*,—but I prefer the designation I have before given it of *cancerous ulcer*, as indicating the scirrhous nature of a new structure, possessing a malignant influence upon every texture in its neighbourhood,—yet inferior to common cancer in the degree of malignancy, since it does not contaminate the absorbent glands,—it is, in fact, what is sometimes called semi-malignant.

I met not long since with an excellent account of the ulcer of this disease, by Dr. Jacob, in the 4th volume of the Dublin Hospital Reports, under the title of an "Ulcer of a Peculiar Character, which attacks the eyelids and other parts of the face," but this gentleman does not seem to be aware that the origin of the disease is usually tubercular, although its malignant influence may be generally observed during its whole progress,—some new structure at the margin, or a little thin layer of a brownish white colour below the ulcer, showing the real character of the disease.

When the ulcer spreads from the eyelid to the conjunctiva of the globe of the eye, the cancerous deposit can even then be dissected and exposed, the existence of any portion of which, after an operation, will cause the re-appearance of the disease. On the other hand, the cancerous ulcer is very

often confounded in description with ordinary cancer; for example, in the excellent observations on Malignant Diseases, by Mr. Travers, in the 15th volume of the Transactions, in addition to a graphic account of, "Cancer of the Lip," and in another section, of "Cancer of the Eyelids and contents of the Orbit," both of which are of the ordinary form of cancer, there is a third section, on "Cancer of the Face," which appears to me to include partly the "cancerous ulcer," and partly the characters of ordinary cancer: the smooth shining surface, and slow progress of the one, with the fœtid discharge, exuberant fungous granulations, and frequent hæmorrhage of the other. The best account of the whole disease, however, with which I am acquainted, is by Mr. Mackenzie, in his admirable work of the Diseases of the Eye, but under the name, without any qualification, of "Cancer of the Eye-lids."

While, however, I prefer the modified term which I have long employed of "Phagedenic or Cancerous ulcer," to designate the lower degree of malignancy of this form, in comparison with that of ordinary cancer of the face, it must be remembered that it is very difficult to destroy all the new structure of even this local disease by caustics, and also that wherever vain and injudicious measures are adopted to *heal*, what in fact must be *removed*, the disease may be much aggravated, and made more like ordinary cancer in its progress. On the whole it appears to me that the removal, by the knife, of the tumour or of the ulcer, is in general the safest method, but in a broad flat ulcer, without any depth of new structure, I prefer the employment of the chloride of zinc, as lately introduced into practice in this country by Mr. Ure, after witnessing its use by Dr. Canquoin, which I have frequently had recourse to without any of the injurious effects of other caustics.

3. The third form of malignant disease of the scirrhous kind in the skin of the face, may be called the *Cancerous Tumour* or *Fungous Cancer of the Face of old persons*, of which I am not aware that any account has been written.

The early stage of this disease is presented to us in the appearance of a small round or oval tumour in the skin, generally in the cheek, or over the malar bone, or on the ali nasi. It is nearly of the natural colour of the skin for a long while, or is a little whiter, from the outer part of the cutis being thinned by the growth of the tumour, so as to allow the colour of its interior to shine through it. A section of the tumour shows it to be white, solid, but not very firm, lardaceous in consistence, rather than of the firm hardness of ordinary cancer. It has a well defined margin, separate from the rest of the skin, and where it projects below the cutis it is covered by a kind of cyst.

The tumour is more globular, soft, insulated and distinct, more completely confined to the texture of the skin, more elevated and less liable to become puckered, than ordinary cancer of the skin of the face, and less liable to have lancinating pain before the ulcerative stage has begun.

It is more elevated and circular, and of a whiter colour, more abrupt at its margin, and extends deeper into the substance of the cutis than the tubercle of the *cancerous ulcer*.

It has fewer vessels ramifying on its surface, and has none of the livid colour, previous to its ulceration, of fungus hæmatodes, nor of the darkness of structure of melanosis, and its texture is firmer and more organized than that of medullary tumours. It is distinguished too from all these diseases, by its being single, and by the length of time that it remains stationary.

If it forms upon the nose, it is easily distinguished from the tumours of hypertrophy of the ali nasi, by the absence of surrounding redness and thickening, by its defined cyst-like limits, and by its having none of the enlarged sebaceous follicles observed in that disease.

The tumour grows thus smooth, globular, and nearly unattended with pain, to the size of a nut, or of a walnut, before it excites apprehension in the patient's mind. At last it is pricked or irritated, or ulcerates spontaneously, and there arises a mass of healthy granulations from the surface, which spread out considerably beyond the tumour, over the surrounding skin, to the height of an inch or more, with a copious discharge of healthy pus, without fætor and without sloughing or bleeding, and not even now very painful. The tumour at the basis of these granulations increases in depth and in diameter, but is free for a long time from any attachment by altered cellular texture to the subjacent parts, so as still to allow of removal with every chance of success. This stage is seen in drawings 4 and 5, and in the preparations of the ulcerated tumours subsequently removed from the same patient, which, however, it may be observed (like all vascular tumours) are not half so large as they were before their removal. The disease returned in one of these cases (for reasons which will hereafter be mentioned); in the larger of the two the disease had not returned for two or three years after the operation, when I saw the patient last.

A comparison of these drawings with the former shows how different the circular prominent fungus of this disease appears from the soft irregularly formed granulations, and the excavated ulcer with everted margins of the *common cancer;* and from the flat, dark coloured surface, destitute of granulations of the *phagedenic ulcer;* neither has it any resemblance to the bleeding, sloughing surface of *fungus hæmatodes*.

The tumour grows to a considerable size before it alters its character, and before the general health suffers much, as will be evident by an examination of a cast on the table, in which the prominent mass occupies the whole side of the nose, and formed an ulcerated tumour three inches in diameter, and nearly two in thickness. The appearance of the surface was here a little altered before the cast was taken, and its prominence lessened by the application of a solution of arsenic, with some diminution of the pain the

patient experienced from the disease, which had commenced 14 months previously; part of the tumour had been then removed by a ligature by a very distinguished surgeon, no doubt from his not being aware of its true nature. The form of *cancerous tumour* in this patient, although of so large a size, is well contrasted with *common cancer* of the same part, in the two casts; both patients died about four months after they were taken, and yet the subject of the former had none of the peculiar leaden hue in the countenance illustrative of the more malignant variety in the latter case.

After a time ulceration extends more deeply into the tumour, and its projecting appearance is lost; the bones and deeper parts become rapidly changed into the new structure, which, in some parts, is gristly like scirrhus, but in others is softer and more pulpy, like some cases of medullary disease of the bones. The ulcer in this stage is also somewhat intermediate in character between these two diseases.

R. B., æt. 59, was admitted into St. George's Hospital, in April, 1835, the disease having commenced about twelve months previously by a small lump on the bridge of the nose, which ulcerated in six months, when of the size of a sixpence, attended subsequently with a good deal of pain. There was on his admission a rather foul ulcer, an inch in diameter, on the surface of a fungous mass, which I was induced to believe from, its appearance, was an instance of this peculiar *fungous cancer*. The tumour reached transversely from one maxillary bone to the other, and from the frontal spine nearly to the tip of the nose,—part of the fungous granulations projecting into the nostril, and the nasal bones having been converted into a soft mass with some loose spiculæ of bone. I at first thought of attempting the removal of the tumour, and bringing down some of the skin of the forehead to form a new nose, but it soon became evident that the disease had begun to affect the frontal bone, and was attached firmly to the maxillary bones at the side of the nose;—the poor man was also weak and thin, and had been totally blind from amaurosis for some years, and seemed therefore unfit for such an operation. The tumour gradually spread laterally, and ulcerated more extensively, and in November following presented the appearance exhibited in the drawing. He died in February 1836, about two years after the disease commenced.

The brain was healthy, with the exception of a small quantity of water. The optic nerves passed close to the disease, the bone through which they passed just beginning to be affected by the disease; they were considerably flattened, and darker coloured than natural, but had their healthy rotundity and appearance near the eyes. The amaurosis being long antecedent to the appearance of the tumour of the skin, had of course no connection with it. The parts affected by the disease can be seen in a preparation. The frontal bone was just beginning to be softened and rough by the disease

where the nasal bones had originally joined it, all trace of which was lost. The dura mater lining the interior of the æthmoid bone, and part of the sphænoid, and of the frontal around the æthmoid, showed a few small projections of the disease into the cranial cavity; a great part of these bones, together with the nasal parts of the maxillary and palatine bones, having been converted into a whitish tumour, in consistence between scirrhus and fungus medullaris, all the cells of the nose being filled with a similar substance; where subjected to more pressure, however, and therefore probably growing less rapidly, it resembled scirrhus. The antrum on each side was clear and healthy. The soft palate, in contact with the palatine plates of the palate and maxillary bones, was thick and hard, as if scirrhous. The sphænoid cell contained a little thick pus, and a part of the bone was dead, and partly loose. The olfactory nerves going through the tumour preserved their natural appearance. The liver was granulated, but all the other viscera were healthy, and no gland appeared to have been contaminated.

The patient from whom the fourth drawing was taken was a man, aged 79, who was admitted into St. George's Hospital in July 1833, with the small tumour on the cheek there represented, which had begun eight months before, and had been ulcerated three months. The tumour was removed, but a small tumour reappeared under the cicatrix, no doubt from a very fine portion of the tumour, which I discovered running perpendicularly towards the malar bone, by the side of the chief part of the tumour, which had been cut across and unfortunately escaped observation. I wished to have again removed the tumour, with the malar bone, to which it was attached, but he would not submit to it. In January following, an ulcer formed in the new tumour, with much pain, and a small gland was felt hardened under the chin, and two others at the margin of the sterno-mastoid muscle. He continued to linger till November 1834, about two years from the beginning of the disease.

Before his death the tumour extended considerably over the temple, and over the upper and lower jaws, and nearly to the nose, there being in the centre a large deep ulcer, the malar and maxillary bones having been destroyed, so that the probe passed down to the bottom of the orbit, full four inches deep, and might, in fact, have been made to enter the brain. The surface of the ulcer to the last, was generally healthy, red, and granulating, and nearly free from bleeding and from sanious or fœtid discharge, though it had much of the severe lancinating pain of scirrhus.

The dissection was very interesting. One preparation shows the size of the ulcer, and the scirrhous nature of the tumour, which remained at the time of his death, a section having been made of one portion, which is turned back for this purpose;—it shows also the formation of this new substance over the surface of the eye-ball and its muscles, where they have

been left insulated by the ulceration, the tendon of the temporal muscle, and the coronoid process of the lower jaw having been also connected with the same structure. The malar bone, the zygomatic process, and the front of the antrum were destroyed, its membrane being unaltered, and the duct of the parotid gland was destroyed, the flow of saliva from it having been very distressing to the patient during his life. The same preparation shows also the manner in which the temporal parts of the sphænoid and temporal bones were converted into new substance, softened and ulcerated by two openings, one of them half an inch in diameter, which led into the interior of the cranium;—to these openings the brain adhered, the dura mater having also ulcerated; and the hemisphere of the cerebrum, which was much flattened when first exposed, presented a large cavity capable of containing several ounces of fluid, extending through the whole length of the middle and posterior lobes of the cerebrum. This cavity contained no pus, which had doubtless escaped through the opening at the bottom of the orbit, but the interior was vascular, and the brain was darker and yellowish, as round an apoplectic effusion. It was remarkable that, notwithstanding this extensive disease, the mind of the patient had not been in the least affected during his life.

Two or three glands were enlarged and hardened;—one had within it some cheesy matter, and another some green pus, the structure of the substance of the glands being probably scirrhous, though not very distinctly so.

One kidney contained an aqueous encysted tumour in its substance, the size of a nut, and had another, holding six or eight ounces of water, attached to its outside, and making the surface of the organ concave from its pressure. These cysts were of the nature of those described by me in the 18th volume of the "Transactions," and are of course not to be considered as any evidence of malignant disease. In the lower part of the liver, however, was a circumscribed circular tumour, about four inches in diameter, of a dark colour, solid and vascular, and with some marks of effused blood in its substance; it seemed to be a deposit of new substance in the texture of the liver, without defined limits, and though it does not exactly resemble the usual forms of fungus hæmatodes in the liver, yet it can hardly be examined without being supposed to be a malignant tumour, more like that form of disease than any other with which I am acquainted.

It appears to me, then, that when the cancerous tumour of the face has reached its third stage of advanced ulceration, it bears more resemblance than it previously does to common cancer of the lips and face; but it is attended with more tumefaction around and beneath the ulcer,—the edges are less curled and hardened,—the discharge is healthy purulent secretion, instead of offensive watery and sanious fluid of a peculiar odour;—and there is much less disposition to bleeding and sloughing.

It is easily distinguished from the Phagedenic ulcer of the largest size by its tumefaction and fungous growth, by its granulating and vascular surface, by the depth and extent to which the subjacent parts are excavated and converted into new structure, by the greater pain which accompanies it, and by the rapidity of its progress: its final and fatal stage being attained in about two years, instead of, perhaps, twenty or thirty.

The fungous growth, where not subjected to pressure, and growing therefore more rapidly, as in the cells of the nose, is much like what takes place in some cases of fungus hæmatodes or medullary tumour, but for the most part it is of a scirrhous character, and may be considered, perhaps, like many tumours, to be in a manner intermediate between or to partake of the nature of the two classes of cases. The ulceration, however, differs from that of fungus hæmatodes, as much as it does from that of common cancer, in having none of that rapid sloughing and bleeding, characteristic of tumours of that description.

In malignancy it is intermediate between the cancerous ulcer and the common cancer;—more rapidly and extensively contaminating the surrounding parts than the former, but not having the neighbouring scirrhous tubercles, and scirrhous bands of cellular texture, met with in the latter disease, and admitting, therefore, of removal by the knife, if sufficient care be taken to excise the whole, with more chance of the cicatrix remaining sound, than in ordinary cancer,—in fact, with almost a certainty of success, where it has not attained a great magnitude.

With regard to the absorbent system, the last case would seem to show that the cancerous tumour does affect it, which is never the case, as far as I know, in the cancerous ulcer of the face;—yet the enlargement of the gland is, at all events, very rare, and we need entertain very little fear of a return of the disease in the glands, after removal of the tumour. In common cancer, on the other hand, the contamination of the glands is very common, and frequently destroys the patient after the operation, even when the cicatrix has remained sound.

Finally, it would seem, from the tumour of the liver in the last case, that the whole constitution may be impregnated with the poison of this complaint, in which respect also the cancerous tumour is more malignant than the phagedenic ulcer, in which I do not know that such an occurrence has ever been observed. But in this point, too, it is probably surpassed by the common cancer of the face, in which form of disease scirrhous tubercles of the liver or some other organ (it has already been remarked) have occasionally been observed; although even in this, the most malignant form of cancerous disease of the face, the simultaneous development of the poison in other organs or textures is rare in comparison with cases of cancer or fungus hæmatodes of most other parts of the body. Therefore, if the tumour of

the fungous cancer is carefully removed by the knife, and not trifled with by caustics, and no gland is enlarged at the time of removal, the prospect of cancer becoming developed in some other part of the body, though not impossible, is too remote to excite any apprehension of a failure of the operation from this cause.

P.S.—Some months after this paper was read to the Society, a work on Tumours was published by an American author, Dr. Warren, which contains a description of the cancerous ulcer, in many respects correct, under the name of *Lepoides*, from the bark-like scaly crust formed on the surface of the little brown tumour, before it has been excited into ulceration. As, however, the crust from which the name is derived, is only an occasional circumstance, not often found, it does not appear to me to be a good term by which to designate the disease, especially if I am correct in believing it to be a variety of cutaneous cancer. I am glad to find, however, that this gentleman, like myself, is of opinion that the malignancy of the ulcer is confined to its immediate neighbourhood.

31, Half-Moon Street,
May 2nd, 1837.

[*Med. Chir. Trans.*, vol. xxi., p. 69.

SUBSTANCE OF A CLINICAL LECTURE
ON
CANCEROUS DISEASES OF THE FACE,

Given at St. George's Hospital.

1. Common Cancer.—2. Fungous Cancer.—3. Cancerous Ulceration: (*a*) of the Cheeks; (*b*) of the Eye-lids; (*c*) of the Forehead.

1. You are tolerably familiar with the usual course and appearance of cancer of the skin of the lip and cheeks, and have seen several cases of the disease lately, in different stages and degrees of severity; and there are before you several preparations and plates of this variety of cancer. You have seen among these recent cases, that it may often contaminate the absorbent glands below the jaw and in the neck, and that it may also be speedily fatal by local irritation; it also happens, though it is a rare occurrence, that you may find evidence in some cases of the whole system being in a diseased state, in the fact of there existing some similar formations in

other parts of the body. The consequence of such a degree of malignancy is this, that a successful operation is seldom to be anticipated; that the disease is reproduced in the cicatrix, or near it, as you have had opportunity of seeing, or that the glands are affected, although the cicatrix remains sound; and the patient is thus carried off in a few years in a considerable number of cases.

2. There is a second form of cancer, which is in some measure intermediate between ordinary cancer and fungus hæmotodes in its character and appearence, which are shown you in these plates and drawings. It appears not to be possessed of a high degree of malignancy, seldom affecting the glands, or appearing elsewhere in the body.. In this plate and preparation the disease is shown as it presented itself in a patient of Mr. Babington's, in whom the operation was successful for at least a good number of years. In this case, on the contrary, the operation failed, because a little portion of the tumour ran perpendicularly downwards, and was left: it might easily have been removed after its reappearance, with a little portion of the malar bone, perhaps; but the patient, who was far advanced in life, would not submit to it, and fell a victim to the disease in somewhat more than two years from its commencement. You may see the final result of its ravages, in this extensive ulcer, which has destroyed a good deal of the cheek, exposing the jaw-bone, and making an aperture in the orbit, communicating with this large abcess of one hemisphere of the cerebrum, which nevertheless left the patient's faculties entire to the last. A tumour of firm but somewhat hæmatoid texture may be seen in the liver, and some glands were affected in the neck, and there happened to be this large serous cyst of the kidney, not malignant, but of the character which occupied our attention not very long ago. In this plate and preparation of another case, you see the course of the disease when left entirely to itself, which was also fatal in about two years from its origin in the skin of the nose; and you may perceive all the sphænoid and æthmoid bones and their cells filled with the morbid structure. In the cast before you of a fourth case, the disease began about a year and a half beforehand, and was fatal in a few months after the cast was taken.

It thus appears that this fungous form of cancer is rapid in its progress, and forms a large quantity of morbid substance, compared with common cancer, and the fungus of the ulcer is very extensive in comparison with its base. Still I believe it is sufficiently local to offer a very fair chance of success from operation; considerably more so, probably, than common cancer. You have not seen an instance of this variety, but you may read a description of it, which I published, in the 21st volume of the Medico-Chirurgical Transactions.

3. The third variety of cancer of the face may be called the cancerous ulcer, or phagedenic cancer, to distinguish it from the fungous variety, and

from common cancer of the skin of this part of the body. You have a good example of the disease in a man of the name of Riley, now in Cholmondeley ward, under my care. I had this plate taken when he was admitted into the hospital, at which time the ulcer was nearly double the size of that now existing. How then can it be cancerous, you may feel inclined to ask, if it can be healed? In truth there is a singular condition of parts, which often prevents the real nature of the case from being recognized in practice. Thus it has been described by Dr. Jacob, in the Dublin Hospital Reports, under the name of a "peculiar ulcer of the face;" so it is also by Mr. Middlemore, who was kind enough to send me his work on the eyes, which I had not seen when my own paper, which I have alluded to, was published. By others, again, it is described as cancer, without any clause of distinction or modification, though this is of great importance for the understanding of its nature. By some, again, it is confounded, in consequence of the modification in question, with lupus, or is called lupoid tubercle, or noli me tangere, though essentially different.

In truth, however, there is always a new structure in this disease, which is not, therefore, a mere form of ulceration; and this structure is of the nature of scirrhus, or cancer, as you had an opportunity of seeing in a woman recently operated on by Mr. Babington.

The term cancerous ulcer seems, therefore, to be appropriate, since it recognizes the essential nature of the disease, and implies that we must not lose time in trying to cure the ulcer, whenever its entire removal or destruction is practicable; but it signifies also that it is not common cancer, and need not frighten our patient or ourselves by exciting an expectation of a rapidly advancing disease with intense suffering, and an almost inevitably fatal result; characters which belong to most varieties of cancer wherever it may be situated. It differs, in fact, from the ordinary progress of cancer by its great slowness, so that I have repeatedly seen it, after it had existed twenty or thirty years, without having materially affected the health; it is generally characterized by the little pain attending it, though occasionally this is severe; it has very little disposition to hæmorrhage, or to the formation of fungus of any size. The discharge has none of the fœtor which that of ordinary cancer possesses; neither does it affect the glands or the rest of the body, as far as I have seen it, being throughout a local disease. I do not mean to assert that it never causes contamination of the textures, for this is of course possible under every form of scirrhus, but only that such an occurrence is so rare as to affect materially one's prognosis and practice, and has gained for the disease the epithet "semi-malignant." This form of cancerous disease affects particularly three situations in the face, but yet its peculiarity does not arise from its locality, since you may have the ordinary form of cancer in exactly the same places: for example, this cast is one of

common cancer on the side of the nose, which is one of the places in which the cancerous ulcer often makes its appearance; but there was, in this case, the same fungus and erosion of vessels, the same welted and everted margin, and the same pain and cancerous deterioration of the system (as the countenance well shows you), which ordinary cancer presents you with in any other part of the body.

So, again, the ravages committed by the fungous cancer, in the eye-lids or nose, in the patients from whom these casts and drawings and preparations were taken, are very different from the appearance which a cancerous ulcer such as Riley's presents, although as much structure may be destroyed in one case as in the other.

It appears as if the peculiar chronic nature of the cancerous ulcer was established from its commencement, and possibly the texture in which it originates may have something to do with it; for it would seem to be confined nearly to the outer surface of the cutis, or rather to the rete mucosum and external layer of the cutis; while ordinary cancer usually affects much more of this structure, or pervades its whole thickness, or is formed in a tubercle below the skin. This will account in some measure for the change which some parts of the cancerous ulcer occasionally undergo; giving such parts, if the morbid structure goes deeper than usual, a great resemblance to the common form of cancer, or giving them an appearance in some measure intermediate between the two varieties. A gentleman, for instance, was recommended to consult me, who had had the cancerous ulcer for twenty-five years, at the end of which time the whole side of the face and forehead, the eye-lids, and nose, and ear, had become involved in superficial ulceration at one period or other; but in one part of the cheek a tumour of the size of an egg had grown, and had been removed by the knife five years before I saw him, and had again formed, and had been excised a year afterwards; after which time this portion of the surface, like the rest, presented the usual appearance of the superficial ulcer. Notwithstanding its extent, and the length of time it had lasted, the disease had not in the least affected the general health, and only some parts were painful, and that chiefly from exposure to the air in dressing. In our patient, Riley, exposure is also very painful, so much so that he could not long submit to it, when the drawing was being taken. The superficial situation of the new structure, in cases of cancerous ulcer, is perhaps the reason why it generally forms a thin flat tumour in its early stage, more like a mole in shape than like the tubercle of the common cancer, or of the fungous cancer, in both of which the new structure, whether in the cutis or below it, is commonly rounded and elevated, instead of being flattened in shape: it almost appears as if the superficial cancerous ulcer could not easily spread to the deeper layers of the cutis, and expanded therefore in a thin flat figure on its surface. At the same time the form is

not essential, since the ordinary cancer does not always present a distinct tubercular figure. If, then, the shape in which the several forms of cancer commence is generally different, while the locality is the same, it may be not unfair to regard the form of cancer as in some measure dependent on this origin; according as it is on the surface, or on the deeper part of the cutis, or in the subcutaneous tissue, in the three cases respectively; and the general family resemblance is at the same time kept up by the exceptions in which the specific difference is in some measure lost, when the disease has spread from the surface to the subjacent texture. I do not mean, however, that this is the sole reason, but it seems more likely that there is also, in different cases, an original variety in the action of the capillary vessels, or in the condition of the system, or in both respects, which influences the progress of the disease; just as there are great differences in the nature of the malignant materials in different parts of the same tumour, or in different tumours in the same body.

On the whole, there is no doubt that the superficial cancerous ulcer is much milder than the others, since so many cases of it are called semi-malignant, peculiar ulcer, lupoid tubercle, and so on, as I before told you was the case by different persons who have described it.

a. One situation in which the cancerous ulcer not unfrequently begins, is in the angle between the nose and the cheek, where it may be seen in this plate in an early stage, or on the prominence of the malar bone. In one part in this drawing it was on the point of ulcerating, and the flat brown or dark-coloured elevation had become somewhat rough, and slightly irregular, with a little cracking of the surface, and oozing of thin watery discharge; and the appearance at this period has led Dr. Warren to give the whole disease the name of lepoides, from the supposed resemblance of the little tumour to the bark of a tree. In the case from which this plate was taken, the ulcer was even now, you observe, less than a shilling in size, though it had been ulcerated four years: you may see the flat, shining, and dark-coloured surface with some blood-vessels running across it, but wholly destitute of granulations; you may perceive, also, the elevated and irregular appearance of the cancerous growth on several parts of the skin around the triangular figure which the ulcer had assumed; this new structure is divided as it were into several granules, or bead-like bodies, as they have been called, and the margin is often thus divided, instead of having one uniformly increasing deposit of new matter everywhere. Where the ulcer is as slow in its progress as it was in this case, you may often see a little of the brownish deposit like the original growth below it, but in other cases this base is destroyed by ulceration, and the ulcerated surface may even cicatrize, as in this plate, the morbid structure being only deposited around the circumference; or again, as you may see in Riley, after a cicatrix has been obtained

of apparently sound texture, a little tubercle or two make their appearance, and then ulcerate afresh, separately from each other, and from the part of the original ulcer which has not skinned over. The proportion of the new matter varies; that is to say, the granular margin varies in thickness from time to time, and sometimes almost disappears under treatment, or spontaneously. This happened in the woman from whom this drawing was taken, in consequence of an attack of erysipelas, and the ulcer itself quite healed for a time, but then the elevated edge increased again, and ulcerated afresh. If, then, the whole be destroyed, the disease may remain permanently well, but the least bit remaining will cause the ulceration to return; it is not mere thickening, in fact, but cancerous structure, white and creamy, and with hard bands of cellular texture pervading it; though on a small scale indeed, since the granules may not be larger than a good sized pin's head. All these facts you have lately had an opportunity of seeing in a patient of Mr. Babington's, in whom the ulcer was removed by excision, and in one of Mr. Tatum's, in whom caustic was employed, as well as in my own patient, Riley.

Mr. Tatum's case, which you have lately seen, presented the disease on the cheeks, and is remarkable for the number of separate points in which the ulcers have appeared, and he has been kind enough to give me these details. It was in a woman, Mary Price, 50 years of age, who was first admitted into the hospital in March 1840, with a hard welted tumour on each cheek, surmounted by a scaly incrustation, concealing an ulcerated surface. The largest, on the right side, is of the size of a sixpence, and is of six years' duration; the smaller one, on the left cheek, is of only twelve months' standing. They occasion little pain or inconvenience, but slowly increase in size, and the glands in the neighbourhood are unaffected. She described the tumours as beginning like small pimples, which on their heads being scratched off, discharged a thin fluid, which soon concreted into a scab, and slowly enlarged. The ulcers were destroyed by chloride of zinc, the sloughs separating on the third day, and leaving healthy surfaces: that on the left side soon completely cicatrized, and has remained well since that time; but the right, when on the point of healing, formed a small patch of the same incrustation as before. She left the hospital on account of her health, and returned in October last, when the ulcer was of the same size on the right cheek as in March. It was again destroyed, apparently, by the same means, but a second time began to spread just before the cicatrization was completed. She was again admitted in March last, with the ulcer, a third time, of its original size, but on the lower part of the left cheek (not in the cicatrix) three smaller patches of the same character had lately appeared. The caustic was this time applied so as to make deeper sloughs, and the ulcers now entirely skinned over; whether permanently or not remains to be proved.

b. A second situation in which the cancerous ulcer not unfrequently originates is at the angle between the inner canthus and the nose, affecting one or both eye-lids, generally the lower one first. Of the disease when situated on the eye-lid you have seen an instructive example in an early stage in Mr. Babington's patient, who has been cured, we hope, by excision. Mr. Pollock has given me these notes of her case, which I will read to you.

Sarah Gautier, æt. 51.—Admitted with semi-malignant ulceration of the skin, below the right eye, including a considerable portion of the lower eye-lid at the middle of the tarsal cartilage, where the meibomian glands have been destroyed, and the eye-ball a good deal exposed, by the lid being forcibly drawn down. The granulations are rather fungous in appearance, and florid; discharge sanious; pain very slight. When admitted the ulcer was about the size of half-a-crown, irregular in shape, of twelve months' standing. Reflection of conjunctiva is dry and unpolished; eye always feels cold. States that she has been subject to this kind of ulceration in the same spot for twenty years; that is, commencing when she was 31. About two years ago the surface was destroyed with chloride of zinc, and the ulcer healed and remained well for a year, the eye-lid being much drawn down after it.

Was ordered the following lotion—

Acid. Nit. dil. ʒj.; Aquæ, ℥iv. M.

Feb. 9.—Ulcer contracted, and improved in appearance.

24.—Ulceration almost healed. To be an out-patient.

March 24.—Readmitted. The ulceration has again returned; with a fungous and tubercular aspect, discharging somewhat copiously, with acute severe pain: nearly the whole of the skin covering the tarsal cartilage is implicated.

April 1.—The whole of the diseased part was extirpated; the cellular texture beneath appearing healthy: the structure of the growth was of scirrhous character, white, faintly striated, and firm, with a hardened base.

17th.—Surface of sore threatens to put on a fungous form of granulation: actual cautery applied.

22nd.—The wound was quite healed on the cheek: the lower lid a good deal drawn down by the cicatrix: the conjunctiva of lid not quite healed. Went out.

In this case the early age at which the ulcer commenced is remarkable; so is also the length of time it remained well after the caustic was applied, which looks almost as if the disease had really been destroyed, but re-appeared in consequence of constitutional taint in the imperfectly formed cicatrix; and, again, you saw how much improvement could be effected for a time by a simple application. In this case, also, it is too soon to reckon on the cure being completed.

Our patient, Riley, shows us the cancerous ulceration of the same parts in

a more advanced stage. This man is 61 years of age, and was admitted February 24th, with ulceration about the eye, which commenced about two and a half years before, by the formation of a little tubercle immediately below the inner angle of the right eye, which gave him no pain, but it ulcerated in a few months time, and subsequently healed under medical treatment. It remained well for a little while, but again broke out twelve months ago, and has since gradually increased.

The ulcer has destroyed the inner half of the lower lid, and extends deeply into the orbit; it has destroyed a part of the inner portion of the upper lid also, and reaches over the bridge of the nose to a small extent on the left side. On the outer part of the orbit the two lids are quite drawn together and hardened, with several hard and prominent tubercles in the skin, and some fungous red granulations of cancerous nature between the lids (which the plate shows you the appearance of, but which do not now exist). The eye-ball is only half its proper size, and is contracted and fixed by the outer half of its circumference, and just shows you where it is situated by your making him try to move it, and you may perceive a little circular part not so red as the rest, which doubtless was formerly the cornea. The inside of the globe is covered by red, florid, and firm granulations, the ulcer here going deeply inwards, perhaps an inch or more, and apparently affects the periosteum of the maxillary and æthmoid bones. At a later period, indeed, an opening formed in the floor of the orbit, so that the probe could be passed to the bottom of the antrum; and yet again, at the present time, this has filled up and closed. His countenance at the time of his admission looked as if he was still in good health, and no glands were enlarged. His right hand, however, could not be held steady, and was constantly tremulous, even when laid on the bed, though it could be moved voluntarily so as to grasp well: this paralysis agitans he had observed three months; and you may have noticed, that it is always increased when he is not well, as, for example, after caustic is applied.

From his manner, and from the affection of the arm particularly, it seemed questionable whether the disease might not extend deeper than the periosteum of the orbit; and I at first hesitated about the use of caustic, lest I should produce a fatal influence upon the brain; but, on the whole, after a few days' observation of his state, and finding only the arm of the same side affected, I concluded that it was only the tremor which elderly persons often have, since, if it arose from the cancer, it ought to affect the left arm, and not the right. Still there was sufficient evidence of disturbed circulation, or diseased blood-vessels of the brain, to make me proceed cautiously, beginning with the outer parts before I applied it to the inside of the orbit; and you may have noticed that he had sometimes a good deal of fever, and depression of nervous power, from its employment.

The cancerous ulceration, then, in our patient has destroyed a good deal of the external parts of the eye, and has caused collapse of the globe; but the structures of the eye-ball resist the ulcer much more than the skin or the conjunctiva, so that I have seen the cornea quite clear, when the conjunctiva round it was hard and elevated, and covered with little tubercles, and with much ulceration; and sometimes, instead of the opaque or collapsed globe being fixed and concealed on one side, as it is in Riley, the ulceration proceeds gradually all round, so that the eye-ball is entirely exposed, and insulated in its socket, and only suspended by its muscular attachment, the muscles also not having so much tendency to ulceration as the cellular membrane and fat of the orbit.

Again, in our patient the periosteum of the frontal, æthmoid, and maxillary bones, is affected, and the osseous structure of the latter has been ulcerated, so as to open the antrum. In some cases, however, the most hideous disfiguration is occasioned, by the absorption of the bones of the orbit, exposing the cavities of the antrum, or the mouth, the nose, and even the cranium. You may easily picture to yourselves the termination of such a scene by irritation and cerebral affection, but yet to the last there may be none of the bleeding, or fœtor, or fungus of common cancer, and no affection of the glands, or of other parts of the body.

c. A third situation in which I have seen the cancerous ulcer commence, is on the flat part of the side of the forehead; which is well seen in this drawing from a patient in the hospital. You may perceive that the ulceration has affected the whole surface, nearly from the ear to the eye, and from the cheek to the vertex, but that the peculiar structure does not exist everywhere, a considerable portion having firmly cicatrized; round the margin, however, there are numerous little brown scabs or tubercles, each like the original one, and capable of producing fresh ulcers. Near the eye the contrast between the firm whitish red surface of ulcerated skin covering the temple is contrasted with the looser texture, and prominent florid granulations of the ulcer of the eye and conjunctiva. The hard bands running across the ulcer in this situation seem to arise from the firmness of the tissue formed by the united skin and fascia, and periosteum; and its so readily healing in many parts, when situated on the forehead, I have been inclined to think is owing to the ulcer only destroying the outer layer of the cutis, leaving some cutaneous structure to cicatrize firmly and readily. In a gentleman who had the disease for many years, the firmer cicatrix, and paler ulceration on the thin skin of the forehead, was very well contrasted with the thicker and more florid bands of the ulceration affecting the thicker skin of the nose, the cheek, and the ear, and the softer and more fungous granulations of the loose tissue of the eye-lids. In both the patients I have alluded to, although of above twenty years' standing, the ulceration had in no part gone below

the cutis, or at the utmost to a very small depth. In one, who is, I believe, still living, there was no glandular affection, and the health was perfect; the other died of an accidental attack of erysipelas, and I examined carefully for any evidence of contamination, without finding any, although the section of every part of the disease, in which it was advancing, showed distinct evidence of its scirrhous nature, however thin was the portion of skin in which the new structure was situated.

It remains for me to make a few remarks on the treatment of cancerous ulceration, in addition to what has been already said; and the first thing that is immediately obvious, from the history of the structure and progress of the case, is this—that you must not lose time in endeavouring to heal an ulcer of such a nature, but as the tubercle and its subsequent ulcer are really malignant, though only locally, and in the slightest possible degree, you must, wherever it is practicable, entirely eradicate the new structure; and it can only be removed effectually in two ways, viz., excision by the knife, or destruction by caustic. Perhaps the operation is more often followed by cellular inflammation, and the action of caustic by erysipelas and severe constitutional irritation; but this is by no means constant. Some patients will prefer caustic to the knife, even if told that the latter is much better for them, and circumstances may make one method or the other preferable in particular cases; or partial excision, followed by caustic, may be more certain than either plan singly; as, for example, a broad thin ulcer had better have caustic applied, while another, which is both large and deep, may be better treated by excising what is readily accessible, while caustic is applied to the remainder, so as to give the patient less pain than if the caustic is required to act through much thickness of parts. The best caustic for the purpose is the chloride of zinc, with a third or an equal part of sulphate of lime, according to the strength required; it is preferable to the kali purum, as with a little practice you can know better the effect you are going to produce, and it is followed by a much more healthy surface, which readily cicatrizes: indeed you may very safely apply it to small portions of the diseased part at a time, so as to give less suffering than if the whole was destroyed at once, which is sometimes more than the system can well bear, and without any aggravation of the mischief, or the acceleration of the growth of the remainder, which I have repeatedly seen in consequence of the potassa fusa having been partially or ineffectually applied You have seen me use also in Riley's case a caustic which the French surgeons are rather fond of, and call the acid nitrate of mercury; I used it of the strength of half a drachm of nitrate of mercury, dissolved in half an ounce of strong nitric acid; it acts only on the part you touch with it, while the chloride of zinc continues to act for a considerable time, and to a depth proportioned to the thickness of the paste you use. The caustic made by arsenic in ointment or

paste, or dissolved in nitric acid, produces the same kind of healthy sore as the chloride of zinc does, but is attended with the risk of poisoning the patient if the ulcer is large, which danger the chloride is free from. Perhaps, on the whole, Riley has complained less of the nitric acid and nitrate of mercury than he did of the chloride, but I do not know that it was quite so effectual as the other. You have seen, however, how much less extensive the ulcer now is than when the drawing was taken, and the orbit, too, has a good deal filled up, and the bone become covered by what appears to be healthy substance, rather than any growth of morbid structure. How near we shall reach to a cure I know not, but I conclude the disease is much too extensive for us to look forward to it. Excision also seemed quite out of the question in his case, without our being able to tell how deep the morbid structure extends to the bottom of the orbit, or how much it has affected the frontal and æthmoid bones, the excision of which would open the cranium.

You have also seen the action of caustic apparently successful in Mr. Tatum's patient, where the disease was on the cheek, and have witnessed the excision of the eye-lid in Mr. Babington's patient, after the caustic had been only temporarily successful; as long a time indeed as a year having elapsed without fresh ulceration. In the latter case there was a good deal of retraction after the caustic, and there must of course be still more after the larger removal of the eye-lid by the knife; and this is a great disadvantage attending either method of treatment on the eye-lid, as the exposure necessarily endangers the eye becoming opaque; there is indeed less risk of this when the lower eye-lid is removed, than when the upper is lost, since the upper one is of more consequence to the wiping and washing of the organ by the tears.

Where the disease cannot be removed or destroyed, it must be soothed by various applications, which seem not only to relieve pain, but to retard the growth, and almost, if not altogether, to make the surface skin over. This was the case with the acid wash, and with the actual cautery, in Mr. Babington's patient, and much good seemed to be done to the ulcer in Riley by the ointment of iodide of lead or of mercury. The black wash agrees well; so does a strong solution of lunar caustic. In one case the ung. argenti nitratis was given to a patient of mine by mistake for the ung. hydrargyri nitratis, which I had ordered, and it made the ulcer cicatrise (for a time at least) in three or four days; and I have since used it several times with much advantage, of the strength of ten grains to a drachm. A gentleman who employed it with benefit while under my care, had previously found an ointment of vervain, which had been recommended to him, afford him more relief than any thing else, and he had tried many applications during many years, including Holloway's ointment, and every other quack medicine, as well as a considerable variety of regular prescriptions. On one

occasion I recollect that the biniodide of mercury did good when the iodide had failed. I have seen the applications of the phosphate or carbonate of iron appear to be of some benefit, as recommended by Mr. Carmichael, I think, but not of nearly so much use as in the more painful forms of common cancer, or some cases of lupus. By some of these applications occasionally the disease seems to be destroyed in much of its extent, while still spreading elsewhere, and now and then seems quite cured, till some fresh tubercles form.

The patient is generally in such excellent health, that general remedies would appear, *à priori*, not likely to do much good, nor can I say that I have derived much benefit from the use of sarsaparilla, or iodide of potassium, or oxide of arsenic, or bichloride of mercury, which are of so much use in many cases of phagedenic ulceration of other kinds, especially if accompanied by any cachexia; the arsenic I think I have seen do a little good now and then. Some form of narcotic, when the pain is very great, combined with a little purgative, seems almost the only medicine usually necessary. In spite of all your care the disease may now and then prove fatal, when of large size.

[*Medical Gazette*, vol. xxix., p. 134, Oct. 15th, 1841.

ON CANCER,

AND

DISEASES RESEMBLING CANCER OF THE TONGUE:

The substance of a Clinical Lecture given at St. George's Hospital, May 28th, 1844.

1. On Cancer of the Face.—2. On Cancer of the Breast.—3. On Cancer of the Tongue.—4. Diseases resembling Cancer of the Tongue: (*a*) Irritable Ulcers of the Tongue; (*b*) Syphilitic Ulcers of the Tongue; (*c*) Psoriasis, or Fissured Ulcers of the Tongue; (*d*) Carbuncular Abscesses in the Tongue; (*e*) Globular Tumour, or Scrofulous Abscess of the Tongue; (*f*) Common Abscess of the Tongue.

On the Operations for Cancer of the Tongue.

As you have lately had several cases of malignant disease of different parts of the body under your observation, I propose to make some of these cases the subject of consideration in to-day's lecture.

1. And first I will read to you the case of a woman, Susan Wainwright, æt. 50, who was admitted on the 14th of May, with cancerous ulceration of somewhat more than the size of a shilling on the left cheek, which began on a congenital mole about a year ago, on which something like a wart then

appeared, and ulcerated about five months back ; to this she says caustic was applied in the shape of a plaster, but the disease soon recommenced. It now presents the appearance of an elevated irregular ulcer, with a hard tuberculated margin, discharging slightly from its surface, the discharge being rather fœtid ; the dark colour of the original mole is still perceptible in its circumference, which is elevated about a quarter of an inch. The skin around the ulcer is very hard, and rather red ; the hardness extends to some depth, and there are some six or eight small tubercles at the lower part just below the ulcer ; these have existed about one month, and came after the caustic was applied ; they are scattered an inch downwards towards the chin, and little more than this in width ; they are elevated, and whitish, and the skin covering them is very thin. Latterly there has been darting pain about the part ; there is no gland enlarged in the neck, or elsewhere ; she has no cough or perspiration ; and the general health is said to be good, except that she has got thinner lately, and looks anxious ; the tongue is clean, and the pulse rather full.

Now you have here an example of a form of malignant disease of the skin of the face ; and the first thing which will strike you is that it has originated in a congenital mole. Nor is it at all uncommon for a congenital disease to undergo a change of this kind ; you will remember, not long since, an example of it in a foreigner, who had a medullary tumour of the arm, in the place of a congenital nævus. There can be little doubt, too, I think, that any morbid growth may make a person more likely to have a cancerous tumour developed than another will be who has no unnatural formation of any kind ; the cancerous diathesis existing, the new structure determines its local appearance at an earlier period ; and for the same reason it is, for a time, more likely to be only local, than when cancer shows itself in the natural tissues. Secondly, you will observe, in this history, that an unsuccessful attempt has been made to destroy the disease by caustic, and the consequence has been probably an aggravation of the malady ; it quickly returned, of larger size and more rapid growth, and with several new tumours around it ; and such is generally the result of meddling with malignant diseases, either by the knife or caustic, without complete eradication of the morbid growth.

In the next place, as to the nature of the malignant structure : the skin of the face is chiefly liable to scirrhous deposit, and that in three different forms ; one of them is a superficial cancerous ulcer, of a low degree of malignancy, of which you will find an account in a clinical lecture of mine which has been published in the 29th volume of the *Medical Gazette ;** a second form is a fungous kind of scirrhus, of which I wrote an account which you will find in the 21st volume of the Medico Chirurgical Transactions ; †

* See preceding Lecture. † *Ante*, p. 185.

and the third is ordinary scirrhus of the skin. The present tumour is not however, any one of these forms of disease, nor yet is it a medullary tumour of the common kind; but it is something intermediate, as it were, between scirrhus and medullary disease, which, as you know, are easily traceable into each other, each proceeding gradually from well marked cases of either species. Moles, and other previous new formations, when they become malignant, are usually of this intermediate kind ; and the secondary tubercles are also of a different kind ; instead of the flat, hard, tubercle, of the colour of the cutis, and like it in density, such as you can see in this preparation, the tubercles are, as here, more elevated, softer, yellowish in colour, with a thin covering of nearly transparent cutis, and a small base.

Believing its nature, then, to be of this kind, the result of treatment was more uncertain than in either of the varieties of scirrhus, particularly as secondary tubercles had already formed, and it was evident that much of the cellular tissue, and a considerable extent of the skin and subjacent structure, were affected, and the growth was rapid. Still, however, I was unwilling to leave the patient to her fate without one effort to destroy the malignant structure, in the absence of any distinct sign of constitutional taint, or of absorption. Malignant diseases must, if possible, be entirely eradicated either by the knife or by caustic, and each method has certain advantages and disadvantages : excision is perhaps more likely to be followed by foul secretion and secondary abscess, and the caustic is more apt to occasion erysipelas. As, however, so large an extent of the skin was diseased, I thought its destruction by caustic, though more painful than the use of the knife, would, on the whole, be the best mode in this patient ; and the chloride of zinc is the kind of caustic which I generally employ, as a very effectual one, without danger of absorption, as with arsenic, and one which, applied to even part of a cancerous disease, will generally leave the rest, for a time, in a more healthy condition. Chloride of zinc was, when first proposed, mixed with flour ; but as it is a deliquescent salt, I prefer adding sulphate of lime, which has been recommended by Mr. Ure ; and you may mix them in equal parts, or with a third of the chloride, according to the strength you wish it to be, *i.e.*, according to the thickness of the parts you mean to destroy. Mixing this powder with an ivory spatula, that you may not decompose it, with a few drops of water, into a thick paste, you spread it on a piece of lint, proportioning the thickness of the paste to the depth of the part to be acted on ; you may thus, if the paste is pretty hard, and there is not much bleeding or discharge, have very little running from deliquescence. The nurse was directed to watch its action, and apply a little carbonate of soda if any liquid oozed out. There is much pain from this caustic for some time, so that I ordered a dose of laudanum. In a day or two a poultice assists the separation of the slough ; the swelling is generally

considerable around it, and sometimes there is a good deal of fever. Where the thickness of skin is considerable, it may first be partly destroyed, as I did here, by kali purum, to lessen the most painful part of the action of the caustic; and you must look carefully to the surface, when the slough separates, to see that no morbid growth remains, and apply a fresh layer of the same caustic, or apply some other caustic—the strong nitric acid; or a caustic which the French are fond of—a solution of about half a drachm of nitrate of mercury in three drachms of nitric acid—till you are sure no part remains.

The result of the application I look upon as very doubtful, since the cellular tissue is much diseased; we must expect a great hole to be formed in the cheek, leaving much deformity; and perhaps the mouth will be drawn to the other side, as it is to an extraordinary degree in a gentleman I am attending, with Mr. Keate, for similar ulceration, by destruction of some of the branches of the portio dura; very probably also there will be a salivary fistula, from the duct being opened. The latter circumstance may, however, be remedied, in all probability, as it was in the patient from whom this cancerous tumour was excised with nearly an inch of the parotid duct, and with complete success for some years at least: a new duct may be established by perforation of the cheek, if necessary, and the use of a seton to keep it open for a time, and of course it matters little in what part of the mouth the saliva enters. I may observe, in conclusion, that for the few days we watched the disease, before I had made up my mind on the most eligible mode of proceeding, I used a lotion of prussic acid, which is very useful in malignant ulcers, and our notes accordingly remark that she experienced relief from its employment. [The slough has since separated, and the surface is healing, and looks sound.]

2. The next case I will bring before you is one of cancer of the breast. The patient is Sarah Watson, æt. 44, who was admitted on the 15th of this month, with scirrhous tumour above the right breast, the gland itself not seeming to be affected, or at any rate not much, as it is not hardened. She says it came from a blow on the breast, between two or three years ago, and the tumour was perceived about six months afterwards; about sixteen months ago it became attached to the skin, and shortly afterwards it ulcerated. The nipple is not tucked in, nor the skin affected over it; but the tumour itself is very hard, and the skin much puckered towards the central ulcer, and it is attached to the muscle beneath: it gives her a great deal of shooting pain at times, and two or three glands in the axilla are hardened and enlarged. The patient looks old, and feeble, and out of health, with short breath, and cough in the morning, and there is dulness of both lungs. She was confined fourteen months ago, and suckled her child till a week ago.

Here, then, is an example of malignant disease of the breast of the scirrhous

form, and you perceive that the patient attributes its occurrence to an accident, a blow, six months before the tumour was perceived, and such is often the case; partly, perhaps, because every one likes to find a cause for their maladies, but in many cases, no doubt, because a blow or other accident really produces cancer in the injured part: it occasions its earlier appearance than might otherwise be the case in persons predisposed to the disease, acting in this respect just like the mole in the former case. In the next place we find that this woman had been confined since the tumour ulcerated, and has suckled her child with the other breast till a week before her admission. Now it is a common opinion that cancer of the breast is more common in unmarried females, and in those who have not had children, than in women who have borne them; but I must confess that I do not think there is any ground for this doctrine, for I have repeatedly seen cancer of the breast, or of the uterus, in persons who were at that very time suckling or becoming pregnant, and in a great number of married people: there are so many more married than unmarried females, that cancer ought to be more often seen in the former, but I suspect that it is not only so, but frequent enough in married women to make the proportion of cases equal in both states.

The case before us appears to me to be not at all adapted for operation, and that for several reasons: first, the tumour is separate from the breast, situated, that is, on its outer part, and only becoming adherent to it as the disease advances; it is hard and dense, and contracted, and such a tumour is always more slow in its progress than when cancerous matter is infiltrated in its tissue so as to affect the whole breast. You may contrast the appearance in these two preparations. If, then, the object be to remove the whole disease, such a tumour is on the whole favourable for operation; but if, on the other hand, circumstances render the entire eradication of the diseased structure impossible, the slow growth of this form of disease makes the operation inexpedient: this is the case here, and therefore we are not called on to meddle with the tumour itself, which may be sometimes advisable, even when a perfect cure cannot be looked for, in order to make the sufferings of the patient less. Secondly, ulceration has here taken place; the skin is drawn in, and altered in texture, and although the nipple is at some distance, and not at all retracted, yet probably the cellular tissue and skin are so much affected, that a return of the disease in the part itself would not be unlikely if the tumour was removed, and a painful operation would have been undergone for nothing. The disease, however, has gone further than this; one or two of the glands in the axilla are enlarged, and so hard that their enlargement is not from irritation only, but must arise from some poisonous matter in their structure. The glands in the axilla are very often enlarged in cases of cancer, without ulcerating, so that if the tumour of the breast is in a very bad state, it may with much advantage be removed in some cases,

although the diseased glands are left: we have seen, however, that the local state does not here indicate an operation, and therefore the contamination of the glands is an additional reason against it. But then, in the next place, our patient is thin, and of a naturally spare habit: now this also is a circumstance to be considered in reference to the question of operation, in many cases of cancer of the breast: there can be no doubt, I think that the progress of the tumour is much slower, and it is less likely to bleed from fungous granulations, in a thin person, than in a fat and bloated one; it is very probable that the kind of tumour seen in a given case is much influenced by the natural temperament, and hence, perhaps, it is that the small contracted stone-like tumour is generally seen in those who are of spare habit, like our present patient, while the large voluminous tumour is as commonly found in stout persons, whose circulation is, nevertheless, feeble and weak, so that an operation is more dangerous in them than in thin persons, independent of the larger wound required, although the more rapid growth of the large mass would make its removal more desirable, if it were not for this reason. But in the next place our patient has a cough, and dulness of the lungs, and cannot easily lie on her left side, and therefore although it may be only bronchitis that she is suffering from, yet there may be some commencement of that state of chest from which so many die who have a cancerous tumour of the breast: there is no reason to think, indeed, that there is water within the pleura, which is often the case, nor is there apparently more disease on the same side as the tumour, yet there may be some beginning of tuberculation of the pleura, or of cancerous deposits in the lungs, which are very difficult to discover in an early stage, unless it be by slight dulness on percussion, as there is a free entrance for the air between the tubercles, and little increase of vascularity for some time after they have begun to form. Finally, our notes say that she looks old and feeble, and her complexion is very unhealthy. A good deal is said of the peculiar look of a person in whom the whole system is under the influence of cancerous disease; a sallow or leaden colour, and sunk expression, are expected, as evidence of the disease being no longer local: I cannot say, however, that this is at all universally true; sometimes, no doubt, you cannot hesitate in saying that a patient with a certain appearance of countenance does in all probability labour under a cancerous cachexia, but the appearance is easily simulated by other diseases; I think, for example, you would hardly distinguish, in many cases, from her looks alone, whether a woman was dying of cancerous disease of the uterus, or was simply exhausted and drained of blood by a polypus of this organ. It is therefore not at all improbable that this woman's emaciated and weak condition may arise, not from absorption of cancerous matter into the blood, but from fourteen months' suckling, with, perhaps, very scanty food.

As, then, from the various reasons I have alluded to, it would have been wrong to operate in this case, I have yet kept her in the hospital to see how much of her appearance, and of her suffering too, depends on the cause I have last mentioned, and you will observe whether she improves under good diet and the use of sarsaparilla, which I have put her upon the use of. Even if there be real cancerous cachexia, the same plan of treatment will still be the proper one, and it will much retard the progress of the disease in the system, and check the growth of the morbid deposits. There cannot be a greater mistake than to reduce a person labouring under cancer by low diet and leeches, which are often employed in order to relieve pain by checking inflammation.

A case was under my care many years ago which very clearly proved this point: a young woman, who was suckling, like our present patient, came to me with a cancerous tumour of the breast at the early age of 29, which was unfit for operation, and after a little while she was induced, as being more convenient from the situation of her home, to attend as an out-patient of another hospital, where she was lowered and had leeches repeatedly applied: she came again to me after a few weeks, suffering dreadfully from increased pain, and looking as if she was rapidly sinking, and so she would have done, if this plan had been continued: I put her, however, on a better regimen, and gave her sarsaparilla, as we are doing for this case before us, and the result was that she soon got stout and well comparatively, and hardly experienced any pain in the tumour, and her life was obviously prolonged for more than a year by the difference of treatment. Support your patients, then, but yet avoid stimulating them too much, for this is equally injurious.

[The woman has very much improved since the 28th of May, when this lecture was given, and has a comparatively cheerful aspect, with much less pain, and has gained flesh considerably, and nearly lost her cough.]

3. A third example of cancerous disease was shown you in the case of Richard Crandley, æt. 45, who was admitted April 17th, with malignant-looking ulcer in the tongue. He says it came about two months ago from the irritation of a rough back tooth, and that its first appearance was like a small cut in the tongue; it has not given him much pain till lately. There is an irregular excavated ulcer, with a hard base, extending from the back part of the left side of the tongue to the frænum and middle part: its circumference is as large as a walnut: there is also some superficial ulceration of the soft palate just where this ulcer of the tongue comes in contact with the palate. The hardness very nearly reaches the gums of the last molar teeth. No gland is enlarged. He suffers some pain from it, especially at night. He never had the venereal disease. The patient is of a dark, sallow complexion; and his tongue is foul, and covered with a dirty yellow crust. Pulse natural.

This is an example of cancer in the tongue, which is generally of the scirrhous kind in this organ ; and in the history we may notice that it appears to have been excited by the irritation of a tooth, which has the same effect as the blow in the former case of determining the locality of a cancerous tumour in those who have already a cancerous diathesis. But there are several other diseases of the tongue which bear much resemblance to cancer in different stages of its progress, and, from the questions which have been put to me on the subject of this case, I am induced, before speaking of what has been done for it, to point out to you, in a rapid sketch, the various disorders of this organ which may be confounded with cancer.

a. First, then, there are *irritable ulcers* of the tongue and lips, which are excited by the irritation of rough teeth, as this disease was ; and they are often very painful, and interfere much with the speech of the patient, and with his eating and swallowing ; they are attended with much salivation, and have a foul and phagedenic surface, and the patient is frequently thin and sallow, and haggard, as if he was suffering from cancerous cachexia : but there are generally several of them, while cancer is single ; and there are many signs of indigestion on which the irritability depends : the tongue was loaded indeed in this case, but it was with a thick dirty yellow crust, which soon cleaned, and arose from irritation chiefly ; and the surface elsewhere was not chapped or reddened, as it is with the irritable ulcer. There is usually an habitual state of constipation, or an occasional attack of diarrhœa, or the appetite is bad ; and the irritable sores, though the edges may be hard and elevated, have no uniform hard base, or tumour, below them in the substance of the tongue, which may be commonly felt in cancer, and was, in our patient, as large nearly as a walnut in its circle. This drawing was taken by Mr. Hewett from a patient recently under my care, and shows you very well the appearance of those irritable ulcers of the tongue ; they were excessively painful, and when in this state are best treated by repeated small doses of laudanum, with some carbonate of ammonia in the course of the day, following generally an active dose of calomel, with Dover's powder and a saline purgative ; and warm water, or some stale bread partly masticated, and allowed to lie as a poultice on the ulcers, will be the best local treatment. After this (or at once, if opium is not necessary), the condition of the general system may be improved by alterative doses of blue-pill, or mercury and chalk, with bitter infusions and carbonate of potash ; or if the patient is thin and sallow, by sarsaparilla, with small doses of biehloride of mercury. Locally, you may apply the linimentum æruginis, if the ulcers are foul, taking care the patient spits it out again ; or a gargle of decoction of bark and myrrh when white sloughs cover them ; and they will readily heal, and much pain be removed, by the use of solutions of caustic, or lunar caustic in substance, avoiding such a quantity of it as might blacken the teeth ;

and wherever rough points of the teeth keep up irritation, they must be filed down, or the teeth extracted.

b. Secondly, a *syphilitic* sore on the tongue bears much resemblance to cancerous disease. There is here a very good drawing of a secondary syphilitic ulcer from a patient who was under my care in the hospital some years ago, and you may perceive that it may form a large excavated ulcer, half an inch deep, with elevated and somewhat hard margins, and a dark livid colour of the surface around it, the bottom of the ulcers being covered by dark brown or nearly black sloughs. The edges, however, are less fungous or warty than in cancer, and, though hard, there is an absence of the firm structure below and around the ulcer which is formed by the new growths of carcinoma; the foul excavation extends into the cellular tissue, but you can feel that the substance of the tongue is sound; and then there is commonly something in the history of the patient, or there is some other symptom present, a spot of psoriasis elsewhere on the tongue, or on the tonsils, or palate, or some eruption on the skin, which excites attention and points out the nature of the disease; and when ascertained it quickly gets well, as this did, under mercury; or under sarsaparilla and iodide of potassium, if the mercurial treatment is contraindicated. Our patient, we perceive, denies having had the venereal disease, and has nothing like a syphilitic appearance in the present state of the tongue; he had, indeed, slight ulceration of the palate, but it was obviously from the contact of the tumour, and soon healed.

c. There is, in the next place, the *fissured* or *dyspeptic* ulcer of the tongue, originating in psoriasis very often, so that besides the ulcer a flat plane surface is often seen in another place, from which the papillæ have been absorbed, or there are chaps on the tongue which show the irritable condition of the mucous surface of the alimentary canal; but the dyspeptic ulcer much resembles cancer if there is a deep fissure with elevated fungous margins cutting the tongue in portions, interfering with the patient's speech, and causing a good deal of salivation, and still more, if there is, as in this drawing, a condensation of the cutis over a large prominence, with irregular, firm, warty excrescences. Here too, however, there is an absence of the morbid structure below the projections; the fissure is frequently in the median line, while in cancer the disease is generally on one side only of the raphé; the rest of the tongue is chapped and irregular, while in cancer two separate parts are very seldom diseased; and there are many of the signs of irregularity of the digestive organs: although perhaps the patient will say he is in good health, yet, if cross-questioned, he will acknowledge that there is more constipation than there used to be, from deficiency of bile, or there is occasional diarrhœa, or the urine is high-coloured, with deposit of lithates; the tongue is furred, and the sleep is disturbed, or the appetite lessened:

often the countenance is greasy, with copious sebaceous secretion, and the pulse is generally quick, and small, and irritable. Sometimes you will cure these ulcers, and get the prominences in great measure absorbed, by the same general remedies which I have just spoken of for the common irritable ulcers. Sometimes alkaline purgatives, with a few drops of colchicum-wine, every morning, will do good for a time, till other remedies of a tonic kind can be given, of which in general the best of all is arsenic, from three to ten drops of the solution being given three times a day, with an occasional rhubarb and magnesia purgative to prevent its injurious effects.

d. Another form of disease which in some measure resembles cancerous ulceration is a kind of *carbuncular suppuration* in the tongue. Sometimes a number of small tumours are seen, of the natural colour, and of the size of peas, which slowly suppurate, and little orifices lead into cavities below the cutis, lined by white sloughs, each coming separately forwards, and the whole lasting a considerable time; sometimes a smaller number of larger and darker coloured elevations take place, and unhealthy brownish white sloughs are exposed, the cutis being undermined by them; still, however, the disease being only in the cellular tissue, without hardness, and not extending into the substance of the tongue. But in other cases deeper and larger sloughs will occasionally form in one or two places, the cavity being filled by foul dark brown, or black sloughs, and the skin sloughs to some width, deep fissures being left when the sloughs come out. In all cases, the absence of hardness, and in most the number of diseased parts, readily distinguishes them from cancerous ulcers, although a superficial glance might lead to mistake. Such carbuncular inflammation as this is seen chiefly in persons of bad system, weakened by intemperance or starvation, or they occur as the sequelæ of syphilis, or the patients are otherwise brought into a state of cachexia. They require generous diet, and the use of the balsams locally, and sometimes the undermined skin, to some extent, must be laid open to expose the cavities and let out the sloughs.

c. There is occasionally seen a *globular tumour* in the substance of the tongue, which has been supposed by Mr. Travers, who has described it, to be an encysted tumour, but which, I should rather suspect, is a scrofulous abscess; for although such a round smooth body as he speaks of sometimes disperses, and might be considered dyspeptic, I have also seen them suppurate slowly as a chronic abscess would do, and discharge a thick cheesy pus; and an encysted tumour does not differ from what is observed in other parts. If there are both forms of disease, you may recognize them by their roundness and smoothness, as contrasted with the harder and more irregular shape—quadrangular, or whatever it may be—of cancer of the tongue. You will see them disappear sometimes under the use of mercurial alteratives and bitters, or iodide of potassium, taking a year or more to disperse altogether;

or you may be obliged to open them, as scrofulous abscesses. I have very seldom seen anything, however, except common encysted tumours, or scrofulous deposits ending in suppuration.

f. You will in the last place occasionally meet with a *common abscess* of the tongue, a swelling quickly ending in suppuration, in comparison with the last scrofulous abscess, and soon filling up and healing. Neither this, however, nor the last, except that there is a swelling, can easily be mistaken for the hard tumour of cancer, nor for its ulcer after suppurating.

Having, then, taken this survey of diseases of the tongue which may be confounded with cancer, let us now return to our own case, which is evidently no one of these; but an example of carcinoma of the scirrhous form. Now the removal of cancer of the tongue by operation is very rarely indeed successful, and the reason is obvious if you examine these preparations on the table; it is this—that there are almost invariably separate tubercles in the neighbourhood of the original tumour; they are commonly in the substance of the organ, varying in size from a pin's head to half a pea's; but I have seen them, in a patient of Mr. Keate, developed superficially in the cutis around the cancerous ulcer. I cannot say that I have myself seen a single example in which the operation was not followed shortly by a return. The tumour in this case was even less likely than many others to be entirely removed, as it was of very rapid growth, having only been discovered two months; and the palate was ulcerated, and possibly contaminated, and the patient had a sallow unhealthy countenance; still, however, it did not seem right, as no gland was enlarged, to abandon him without any attempt to save him from a very miserable end. I did not do it immediately after his admission, however, in order to be certain that the ulcer of the palate was not of the same character, and to see how quickly the ulcer was spreading; and I used a solution of the chlorinated soda, of the strength of one pint of the saturated solution to twenty of water, and gave him for a few days some arsenic; not that I doubted its nature, indeed, but that you might see its failure, and it could do no harm, and something must be given or done till we had determined on the operation. You saw, then, that on the 26th of April the ulcer on the palate was nearly well, and on the 29th, the notes say that great part of the ulcer of the tongue was healed, but that the hardness remained; and on May 2nd, an operation was performed.

There are two methods by which cancer of the tongue may be removed; namely, excision by a bistoury, or by ligature. Where the disease is situated at the front or sides of an organ, I think you may take your choice; and the knife is perhaps the best way of doing it, as it is easily effected with little future mischief; while the ligature sometimes causes a good deal of swelling of the tongue, and difficulty in breathing and swallowing. I have known a

patient half suffoeated, indeed, from the large swelling pushing the tongue baekwards, and filling the mouth, and ulcerating it by pressure against the teeth ; and you can in this part easily tie the bleeding vessels. But in our patient the disease was far baek towards the root of the tongue, and I think exeision is here quite out of the question, from the great size of the lingual and ranine arteries endangered by the knife ; and you saw that even with the ligature the hæmorrhage was attended with some danger ; the tongue being very brittle, and easily breaking down under the silk. The lingual artery has sometimes been tied separately for hæmorrhage, or attempted to be tied without being found. I determined, therefore, on trying to remove the whole disease by ligature. The mode in whieh I did this I have already explained at the time of the operation ; but as some of you may not have been present, I will just say to you, that in the usual way of tying a large tumour, by a double ligature, some part is liable to eseape ; if you tie the ligatures very tightly, they may slip and so leave little portions beyond them ; or else, to seeure the whole, a good deal of healthy substanee must be ineluded. The ligature I used was therefore made to perforate the tongue twiee ; the first time quite towards the front of the tongue ; and the second time quite behind the back part of the tumour ; by then cutting both the loops on the surfaee of the tongue, the under or middle loop can be tied tightly in a longitudinal direetion, eutting off the whole length of the tumour from the body of the tongue, and then the two ends can be tied quite transversely, so as to seeure the whole tumour without any slipping. One thread unfortunately broke, so that I was obliged to modify this plan, and pass the eyed needle again through the baek part of the tongue, to seeure the whole if it were possible.

Our notes remark that he lost about six or eight ounees of blood at the operation, and seeondary hæmorrhage oeeurred to the extent of about fourteen ounces ; this was, however, controlled by astringent injection of alum, and ieed water, and by pressure by the finger ; but it broke out again in half an hour, when a ligature was passed through at the base of the tongue, and tied, whieh permanently stopped it.

Our patient had very little of the swelling I have just spoken of, having on the next day, our notes tell us, some diffieulty of swallowing, but none of breathing ; and on the 8th, the ligature was loose, and no hardness was perceptible. Some eare is required during the separation of the slough, that the tumour does not again beeome organized ; for the ligature ean scarcely be tied so tight but that some little vessels in the eentre may eseape pressure, and thus allow blood again to enter when the eireumference has beeome loosened by ulceration, and the ligature no longer presses on the remainder ; the eonsequence is (and I have seen the same in tying large nævi), that a

supply of blood again enters, and parts apparently quite dead and black are again endowed with vitality, and would soon adhere to the surfaces from which they have been cut off by ulceration ; and the disease would be soon as large as ever, unless on the third or fourth day, when the ligature begins to be loose, you applied a fresh one, so as to finally destroy the remaining attachment. This however, was not necessary in this case, and on the 15th of May, the cicatrix had contracted, so that the man was desirous of being an out-patient, promising to show himself from time to time.

On the 20th, the notes remark, the ulcer is nearly cicatrized ; the voice is much improved, and he has no pain : but they add, the back part of the tongue attached to the palate and jaws has a reddish prominence of suspicious appearance ; and on the 27th, a week afterwards, the return of the disease was already evident. The ulcer remained nearly healed, but with much hardness below and around the contracted cicatrix ; the surface of the anterior arch of the palate, and the membrane passing to the underpart of the jaw, has some distinct warty growths rising from them.

But the operation having not been successful, why not operate again? I must confess that the chance of doing good appears much too small to justify further interference. The disease has returned, and is increasing so rapidly, and its progress towards the palate and jaw is already so considerable, that it would be sure to fail ; and I should run much risk of hastening the progress of the disease ; besides the chance of hæmorrhage, which has just been so great, the unsuccessful operation would add to the irritation and rapidity of the next growth ; nor does the application of any caustic seem, for the same reasons, admissible. It is, however, a miserable fate to which we leave the poor man, with pain, and irritation, and difficulty of swallowing and breathing, from its progress backwards. You can here see, for example, the epiglottis pushed back, and the arches of the palate much affected, as they threaten to become in our patient ; then the patient is half-starved, if he escapes suffocation, unable to swallow even the softest food from pain, and inability to move the parts in the throat, and sickened as he often is by the discharge, which is as fœtid and horrible as a mixture of the fœtor from a bad mercurial salivation and diseased bone at once, may be supposed to be. Neither do I think there would be any advantage gained by another method of applying a ligature, which has been sometimes done by incision under the chin, between the muscles of the tongue ; it is difficult, indeed, as you saw, to apply the ligatures by a needle in a handle, when the disease is far back in the mouth ; and for some cases of considerable size, some such method as is described by Mr. Arnott in the Medico-Chirurgical Transactions, may be practised. I will not detain you to explain the plan, but you can understand the course of the ligatures by looking at this drawing, which accompanies his case. In our patient, however, the difficulty is not so much

from this cause, as it is from the implication of the adjacent structures in the disease. [In a week or ten days after this lecture, the posterior arch of the palate, as well as the anterior, showed signs of new malignant growth, and the disease seemed likely to make quick progress.]

[*Medical Gazette*, vol. xxxiv., p. 385.

CLINICAL OBSERVATIONS

ON SOME

DISEASES OF THE NOSE.

1. Simple Inflammation of the Schneiderian Membrane.—2. Chronic Thickening of the Schneiderian Membrane.—3. Obstruction and Closure of the Nostrils.—4. Diseased Secretions of the higher part of the Nose.—5. Ulcers of the Cartilaginous Septum.—6. Ulcers of the Schneiderian Membrane.

James Beach, a boy about nine years old, was admitted on the 9th of July; and our notes give us this history:—He states that about four months ago a large pair of scales fell from the height of several feet upon his nose, and cut it on the outside severely (though there is little mark of this at present), and that this was followed by a good deal of bleeding both from the wound and from the nostrils. A fortnight after this he fell from a donkey, and was unlucky enough to bruise his nose again, against a tree. A week afterwards he began to feel a good deal of pain in the nose, from which there has been a discharge, and the nostrils have frequently bled a good deal. On his admission the pain had lessened, but he still complained of a good deal about the middle of the nose, where the cartilages and the ossa nasi are joined, which part seemed a little elevated. In the interior was an opening leading through the septum, which was large enough to admit the finger, around which there was some ulceration and redness of the mucous membrane. His health was apparently not very good, though with nothing particular to complain of.

There is another patient, a girl of 15, Ann Paisley, who was admitted as long ago as February 19th, with ulceration of the nose, much of which had been destroyed before her admission. This ulceration of the nose began three years before, but had been spreading more rapidly during the last three months. It seemed that in this case, also, the disease had commenced by an ulcer in the septum, which spread till the opening was large enough to admit the finger from one nostril to the other; and that about a year after the ulceration commenced in the interior, an ulcer formed in the ala also,

both parts having since ulcerated till there is the great destruction which you now see, the exact appearance of which, however, I will not now dwell upon.

There is also another boy, in whom, just as in the last patient, an ulcer formed first in the septum, then affected one ala, and afterwards the other, on the inside, and finally spread to the skin of the outside, in the same manner as in Paisley, and with a somewhat similar appearance.

The occurrence of these cases, and of some other instances of diseases of the nose, has induced me to make a few remarks to you to-day, on some of the diseases of the Schneiderian membrane, and in another lecture, perhaps, on some affections of the outer part of the nose, so as to give you a slight sketch of their connection with each other.

I.—The most simple of these, as in most of the textures of the body, is common inflammation, with which we are all familiar, in the shape of catarrh or coryza; but in fact, similar inflammation may take place from other causes also, without the usual affection of other contiguous mucous membranes. You observe, then, as you are well aware, just as in inflammation of other mucous membranes, a great increase of its natural secretion, and discharge of watery mucus, acrid, and excoriating the parts around, and you see the membrane itself red, and inflamed, and swollen, the consequence of which is the loss of smell, obstruction to the passage of tears, impairment of speech, and so on; and if the inflammation affects the higher parts of the nose, a good deal of headache, and local tenderness, and pain, and considerable febrile disturbance. Then, if the case goes on well, the discharge becomes in a few days thick and viscid, or purulent and yellow; and this lessening by degrees, the membrane again becomes healthy. It would scarcely be necessary to allude to such a case, but for this caution to you, that if simple inflammation, from any cause, lasts a long time, and a person has a predisposition to frequent attacks of inflammation, the foundation may thus be laid of more serious mischief. To show you to what an extent the discharge from inflammation may reach, I may mention that I have met with a case, in which not less than a quart of watery fluid was said to be discharged daily. Neither is it necessary to dwell upon the treatment, as a calomel and saline purgative will generally be all that is required; or, if there is fever a warm bath, with a little Dover's powder in saline mixture, and locally steaming the nostrils, or snuffing up warm water, so as to foment the affected membrane. To check the disposition to this local inflammation from slight causes, you should employ tonics, such as bark, or bitters, and alkaline medicines, and you should check the secretions, and invigorate the membrane, by the use of astringent solutions, such as common tea, or oak bark.

II.—You will be more frequently consulted, however, with regard to a chronic inflammation of this membrane, or scrofulous thickening, for I believe it scarcely occurs, except in children or young persons, with scrofulous disposition; and very often it is accompanied with discharge from the ears, enlarged glands, or other symptoms indicating the state of system on which it depends. The thickening produced by this inflammation of the membrane is so great, that it often hangs down into the nostril, and resembles the fleshy polypus of the nose. A little girl of about six years of age was brought to my house very recently by a medical man, for polypus, which proved on examination, however, to be only the state of membrane I am alluding to. You can generally distinguish it at once by this circumstance, (besides the different form of the prominence,) that the thickening is seen just as often on the septum as on the outside, and it frequently takes place on the whole circumference of the nostril, while polypi are always, or almost always, on the outside only, deriving their growth from the several spongy bones of the nose.

The little girl I spoke of used to snore violently at night, which is frequently the cause of the disease being first discovered; she breathed with difficulty, and from the mouth being constantly open, was tormented with constant thirst at night, leading her frequently to ask for water to drink; and from the same cause the tongue was harsh and dry, and the lips dry and chapped; and she spoke through the nose, as it is called—that is, she could not speak through the nose at all, the air being unable to pass freely through the nostrils. On examining the nose, the Schneiderian membrane was found red, and vascular, and thickened, especially on the septum, and there was a little muco-purulent discharge from the nostrils.—Sometimes the discharge is fœtid, and the membrane slightly excoriated, or ulcerated; and if the disease is extensive, the little patient often complains of soreness and tenderness of the outside of the nose; and it appears flattened and broader than natural. Besides the other scrofulous symptoms which I alluded to, I have several times seen this thickened state of the Schneiderian membrane accompanied with an analogous enlargement of the lip; that is to say, half the upper lip, perhaps, is double its proper thickness, and hard and somewhat painful. If so, both the affections are cured by the same means.

The nature of your medical treatment is clearly indicated in these cases; you are to exhibit a combination of alteratives with tonic medicine. Let a young child take of hydrargyrum c. creta, four or five grains, with six or eight of rhubarb, every other night, or a little rhubarb with half a drachm of sulphate of potash, or one drachm of tartrate of potash, twice a week, or occasionally a dose of calomel with a few grains of rhubarb; and along with these medicines give some light tonic: one of the best for children is about

twelve grains of calumba powder, with eight of carbonate of potash; or very often steel will agree very well, one drachm, or one and a half of vinum ferri, three times in the day; or twelve grains of calumba, with ten of carbonate of iron, twice a day; or you may give some tincture of bark, with small doses of oxymuriate of mercury. Dissolve one grain, or half a grain, of oxymuriate in two ounces of tincture, and give the child a tea-spoonful twice a day. This is a medicine which was recommended by Sir Astley Cooper in scrofulous affections, and which I often give with advantage. To an adult you may give, with the same view, three or four grains of blue pill every night, and some bitter infusion, with carbonate of potass. These medicines must be given, as in all such scrofulous affections, for a considerable time, with occasional intermissions of a week or two; for though you may always expect to cure the disease, the disposition will sometimes last for many months, or even a longer time.

Locally, you will direct some stimulating application, such as the nitrated quicksilver ointment, diluted at first with a third, or half its weight, of spermaceti ointment, and subsequently undiluted. This should be slightly softened, and applied by means of a camel's hair pencil to the part every night and morning; or if the nostril is much obstructed, or the thickening extends far up, a little lint may be wrapped round a bougie, and the ointment applied by this means. You may in the same way apply the red or white precipitate ointment, if the other does not agree; or a solution of lunar caustic, five or eight grains to an ounce of water, may be used with a pencil. If there is a good deal of discharge from the nostrils, you may check this before having recourse to the ointments, by some lime water, or a solution of alum (a scruple, or half a drachm to an ounce), which may be snuffed up the nostrils; or lastly where there is a great degree of enlargement of the membrane, you may snip off a small piece with a pair of scissors, and afterwards use the stimulating applications which I have mentioned.

III.—When inflammation has been extensive, the nostrils may be almost, or entirely, obstructed by the thickening of the membrane, or by adhesion. A girl of about twelve years of age was brought to the hospital, the day before yesterday, with the membrane so much thickened by chronic inflammation of several years' standing, that the air could scarcely pass through at all. She had a good deal of pain in the nose and forehead; the nose was swelled and tender, and the inflammation of the interior of the nose had recently occasioned an erysipelatous inflammation of the outside of the nose and of the face. In such cases as this, besides the local and constitutional means I have described to you, you will do well to keep a hollow tube, such as a piece of catheter, with some lint or leather round

it, in the nostrils for a short time, to procure a more rapid removal of the thickened membrane, and enable the upper parts to be reached by your stimulating applications; the outside of this tube, or rather the lint upon it, being smeared slightly with one of them.

But, further, if there has been much purulent discharge from the inflamed membrane, with a little excoriation or ulceration of the surface, the nostril may be totally obstructed by adhesion between the opposite surfaces, which have been kept in contact by the subjacent swelling. I have several times seen this take place in one nostril, or partially in both; but I saw, with Mr. Fernandez, not long ago, a little child, about two years old, which had total obstruction of both sides, each nostril being closed by what now looked like a transverse thin membrane, about half an inch within the orifice. This obstruction was situated just at the entrance of the lachrymal ducts, which is the usual situation of such adhesion; so that the openings of the nostrils were quite dry, the tears in a great measure entering the nose behind the membrane, though they partly overflowed upon the face. This obliteration might possibly have been congenital, for there was no history of the affection; but as it had only recently been discovered by the child's snoring, so as to disturb the others who were with it, and from a scrofulous affection of the eye-lids and conjunctiva, which had produced total blindness, I have no doubt that it had been the consequence of a similar scrofulous disease of the nasal membrane. In this or any similar case, an incision through the membrane is very simple; nor, with a little knowledge of the anatomy of the part, can there be any difficulty in dividing the adhesion of a much broader surface, a little more caution only being necessary in the use of the bistoury than where there is only a thinner partition. Subsequently to the incision, you will keep the nostril pervious for a little while, during the cicatrization, by a metallic tube or portion of catheter.

You would scarcely think, perhaps, that the obstruction of one nostril would be of much consequence; but I was only yesterday informed of a case in which one nostril was nearly closed by the septum being turned to one side (as is often the case without any external deformity), and by the membrane on it being thickened: the consequence of this was so much inconvenience and distress, that a small hole was punched in the septum which greatly relieved the patient, by allowing the tears and mucus, and the air, to pass freely from one nostril to the other.

IV.—I have mentioned to you the secretion of considerable quantities of water, and mucus, and pus, from the inflamed Schneiderian membrane; but, besides these, you will meet with very singular secretions, when the upper part of the nose is affected, including especially the several spongy

bones. A woman is now attending as an out-patient of mine, who complained of having had, for six months, a good deal of pain in the nose and head; loss of smell (though with the sense of an offensive smell in the nostrils); obstruction in breathing and speaking, snoring, and thirst; and she was evidently much irritated by this state. There seemed to be some vesicular polypi high up in the nose; but, on examination, this proved to be a tough, tenacious mucus, covering a softened and relaxed state of the membrane, which hung loosely, and allowed the probe to perforate it; and in one part there appeared to be a trifling exposure of the vomer. This has been much relieved in about a fortnight, by merely the application of lime-water snuffed up the nose, and nitrated quicksilver ointment, with one or two doses of purgative medicine.

I was recently shown some small bodies, which were more like half-formed cartilage, both in external appearance and on a section, than anything else, and which were exactly of the shape of the superior spongy bone. These used to come away from time to time, either by the nostril or from the throat, in a delicate person, subject to hæmoptysis, the nostril being obstructed for a few days previously to their discharge; and one or two thus separating at a time during many years.

Perhaps you have seen some bodies of a similar shape, which have been formed in the nose of an out-patient of the hospital, who had suffered for a considerable time from pain and obstruction in both nostrils; and on one side was a projecting body in the nostril, with some external swelling; the appearance of which altogether was exactly like that of a malignant polypus; at last some body projected lower than usual in the nostril, and a surgeon pulled out several portions of substance like chalk in consistenee, and exceedingly fœtid, and which were also in shape exactly like the spongy bones; they were probably composed of phosphate, or perhaps carbonate, of lime, with fœtid mucus, secreted from the upper spongy bones.

I conclude, in such cases as these, that the upper spongy bones were in part diseased, and that the peculiar bodies were secretions from the membrane covering them, mixed with portions of the membrane itself, and dropping off from time to time to be again succeeded by others; and, from the small quantity of bone affected in the first of the cases I have mentioned, compared with the extent to which the membrane of the upper part of the nostril was diseased, I imagine the disease of the bone (which was evidently not common caries), may be secondary to that of the membrane, which may be an inflammation differing from that met with in the lining membrane of the general cavity, in consequence of the peeuliar texture of the æthmoid bone.

The last case was much benefited by a combination of sarsaparilla, with arsenic and liquor potassæ. You may try, then, either this or bark, or some

other form of tonic, with occasional purgatives; and locally you may employ lime-water, black-wash, a solution of oxymuriate of half a grain to the ounce, or a grain of sulphate of zinc, or a scruple of alum, or some similar lotion, which in all diseases of the higher parts of the nostrils, should be occasionally injected with some force by means of a syringe, besides being frequently snuffed up the nostrils.

V.—We now come to those cases in which there is almost from the first some breach of surface by ulceration; and, first, let us consider ulcers in the cartilaginous septum, of which the boy, whose case I read to you, affords you an example. In him the affection, you observe, has been the result of inflammation arising from a blow; but an ulcer through the septum frequently takes place from other causes, as in Paisley, and the other case I mentioned to you; and the patient is frequently not aware of its existence for some time.

A woman came under my care for ulceration of the throat, in whom I found, at the same time, a hole through the septum three quarters of an inch in diameter, the edges being still ulcerated, the woman herself only thinking that she had frequently caught cold in the preceding six months: and I have often seen similar perforations, cicatrized and well, in persons who did not know that such a thing had previously been produced. In fact, as long as every part of the circumference of the cartilaginous septum is unimpaired, the form of the nose is not at all altered, and no possible inconvenience can arise from the perforation. If, however, the part of the cartilage adjoining the cutaneous septum is destroyed, the end of the nose will drop down a little,—as you saw in Paisley on her admission; or if the upper part is removed, then an indentation, with turning up of the end of the nose, will be the result.

In some cases, however, if you watch the disease in its early stage, you will find the patient complain of some pain in the nose; the end of the septum, especially near the junction of the cartilage with the vomer, being red and inflamed: then there forms on one side or other a kind of pustule or white spot, which ulcerates, and leaves a little hole in the membrane and cartilage: then a similar little swelling may perhaps be seen in the other nostril, and in a day or two more a hole will be perceived through the septum; or more frequently the ulcer will spread from one side to the other; and a few days after you first observe it on one side, you find that the little hole leads from one nostril into the other. This continues to spread, especially if it is irritated, as will be usually the case by the patient's finger; and the hole enlarges to the size you see it in Beach and the other boy, with a red margin, and a little purulent and sanguineous discharge. There appears, then, in such cases, to be an inflammation of a portion of the

cartilaginous septum of the nose, with a little abscess on its surface below the lining membrane, like the abscesses beneath the periosteum of a diseased bone: or perhaps there may sometimes be a small abscess in the cartilaginous septum itself, ulcerating towards both sides at the same time. I believe, however, that this latter form is rare, compared with the ulcer in the substance of the membrane, or a smaller ulcer of the surface, both of these forms spreading secondarily to the cartilage below.

Now very often the affection seems to be almost entirely local, so that the application of nitrated quicksilver ointment, diluted or not, according to the degree of pain it produces, or one of the mercurial precipitates in ointment will be sufficient, with an occasional purgative, to effect a cure. At other times, however, you find some derangement of the general health, which requires to be attended to. In Beach there seems to be nothing wrong, besides some appearance of a scrofulous constitution in the countenance; but in Paisley there has been considerable alteration in the health. What I have done, therefore, for Beach, has been to give him, first of all, two doses of calomel and rhubarb, and then I ordered some Calumba powder and carbonate of potash, twice a day. Locally, he has only used black-wash; and under this plan all pain has gone; the bleeding has ceased, and the ulcer appears to be healing fast. I will speak of the treatment of the other case hereafter, on account of its complication: the general principle, however, is to be the same in all such cases—tonics and alteratives of some kind. Sometimes, in a grown-up person, you find some degree of cachexia; and I have sometimes seen at the same time, with the hole in the septum, an ulcer in the pharynx, or a hole formed through the bony palate at the floor of the nostril, just like that through the cartilage of the septum. Give, then, to an adult, sarsaparilla and liquor ammoniæ, or sometimes small doses of blue pill, with gentian and potassa, or some other tonic, with good air and nourishing diet, and the disease will soon yield; in which respect it seems to be of a more healthy character than ulceration of the Schneiderian membrane itself, beginning on the surface.

VI.—We now come, then, to the subject of ozæna, or ulceration of the Schneiderian membrane of the nose. I should observe, indeed, that you will find some surgeons employ the term ozæna to signify any ulceration of the nose, while others use it more strictly in its etymological sense—confining it to those ulcers in which the discharge is most offensive, and in which generally the bones of the nose are carious. In reality, however, there is no essential distinction between such cases; the difference is one of degree only—from a small ulcer of a portion of the Schneiderian membrane of one nostril, to an extensive ulceration of the whole surface of both nostrils; and lastly, to those in which the ulceration of the membrane has

spread to the bone below it, occasioning caries and ulceration of a considerable part of the bones of the nose.

These ulcers may begin in any part of the nostrils, and they secrete a purulent and generally offensive discharge, with occasional mixture of blood, which comes away with the natural mucus secreted in greater quantities than usual. The discharge sometimes becomes concreted into thick brownish crusts, which separate occasionally, or are picked off by the patient, and a superficial ulcer is exposed, with a smooth yellowish surface and a somewhat phagedenic margin, and the mucous membrane around is seen to be red and inflamed. There is some degree of pain in the part, and there is more or less pain and tenderness, and fullness, across the bridge of the nose; and the pain is frequently severe and extensive in the forehead and sides of the head, from inflammation of the membrane in the frontal and other cells; and there is a diminution or deprivation of taste and smell. If the ulceration is considerable, the health becomes very much affected; the patient being debilitated, emaciated, and in a state of constant irritation; the countenance pale, and expressive of much suffering; the pulse 120 or 130, small and weak, and irritable; and complaints are made of heat and flushing, with occasional chilliness, and pain in the limbs. One symptom that is almost universally complained of, is sleeplessness; so that I have known some persons assert that they have hardly slept above half an hour at a time for weeks together. These severer symptoms are chiefly experienced when the disease affects the upper part of the nose; nor is it extraordinary, if we consider the anatomy of the parts, that the patient should sometimes experience much disturbance of the sensorial powers evinced even by epilepsy, mania, or a fatal effusion at the basis of the brain; though, if fatal, the patient seems to sink more commonly from weakness and irritation.

The causes of ozæna are evidently some kind of cachexia of the system; so that it is occasionally met with in scrofulous children—as in Paisley and the other boy, in whom the external disease was preceded, for a considerable time, by ulceration of the interior membrane of the nose, both on the septum and alæ nasi. A more common cause of extensive ozæna, however, is the poison of syphilis, or the abuse of mercury; so that you seldom now see the extensive destruction of the nose that used formerly to be observed, when syphilis was not so well treated as at present. It may occur, however, from any other animal poison—such as that of glanders, or from inoculation with putrid and foul meat. The consequence of this state of the system is, that from whatever cause it may arise, ozæna is often accompanied with loss of portions of the soft and bony palate, and extensive and foul sloughy ulcers of the pharynx and parts connected with it; with pains in the limbs; with eruptions of ecthymatous pustules, or ulcerating tubercles or rupia; such an

eruption being sometimes confined to the external parts of the nose and adjacent parts of the face, from the immediate local irritation of the internal ulcers, but at other times extending over the remainder of the body. Such a combination of symptoms, in fact, is met with, as would some time since have been considered as decidedly syphilitic, but which may in reality be met with as a consequence of any poisonous or other cachectic cause whatever.

With this view of the case, then, it is little necessary to inquire minutely into the original cause of the complaint; since it is very seldom, indeed, right to adopt a mercurial course of medicine as an antisyphilitic treatment, especially when mercury has already been given; and whatever may have been the origin of the ozæna, nearly the same plan of treatment will be successful. Sometimes, indeed, a cautious employment of mercury may be required, when it does not yield to other remedies, but its effects must be very carefully watched; for instance, one of the most successful cases of the kind was in a little child of about six months old, who was brought to me, and whom you may have seen last year, and who had not in the least grown since its birth; a more miserable object, indeed, could scarcely be seen. Ulceration and discharge from the nose had commenced when the child was six weeks old, and had totally destroyed the septum and much of the upper part of the nose, so that it was quite flat upon the face, and hardly had any orifice for breathing and for the escape of the copious purulent secretion that was present. About a month previous to my seeing it, a few stains had appeared about the thighs; not having, however, at all the usual colour of syphilitic eruptions, nor could I discover that either the father or mother had had any disease of this kind. The father had died of erysipelas, under my care, about a fortnight before. As the most probable means of saving the child's life, however, by stopping the disease suddenly and increasing the chance of absorption of chyle, I gave it half a grain of calomel and some compound cinnamon powder three times, and in a short time twice a day, with some nitrated quicksilver ointment to be applied to the nostrils; the consequence of which plan was, that (without, of course, any evident mercurial effect) the ulceration nearly stopped, and the discharge was almost gone, and the child had grown more in three weeks than in the whole of the six months it had previously lived; the deformity, however, being, of course, irreparable. Unquestionably, however, the general principle on which the cases of ulceration of the Schneiderian membrane are to be treated, is the tonic system; and the best of the tonics that you can give is sarsaparilla. I give this medicine with perfect confidence that by far the majority of cases will be cured by it; and I am satisfied that the chief reason why many persons have little faith in its efficacy, is that it is not given in sufficient quantity, nor continued for a sufficient length of time. The common

decoctions alone, in small quantities, cannot be relied on ; the patient must take not less than twelve ounces of the compound decoction, with the addition of from one to two drachms of extract of sarsaparilla ; and this must be continued from three to four months in old cases, and for several weeks after the disease is apparently cured. Very often your patients will get fat and well, and all local symptoms will be subdued in four or five weeks, and they will not submit to the necessary confinement and continuance of medicine after they think themselves cured. Such patients will be sure to have a relapse, but the same treatment again resorted to for double the time, will again cure the disease. Sometimes, indeed, a few weeks will suffice. A woman had suffered from ozæna a year and a half, and for half a year had had an ulcerated opening through the bony palate into the nose ; experiencing much pain in the head and eyes, and throat, with considerable emaciation and disturbance of the general health. She was permanently cured in six weeks ; but so short a course of medicine would be insufficient in most instances of so long standing. You may often, with great advantage, combine the sarsaparilla with twenty or thirty drops of liquor ammoniæ, or some salvolatile, when there is much nervousness and erethismus: sometimes with a drachm and a half of liquor potassæ, or some carbonate of potash. Sometimes alterative doses of mercury are of great service, with the sarsaparilla— one-fourth or one-third of a grain of oxymuriate daily, or three grains of blue pill every night ; but not so as to affect the gums, and commencing some time after the use of the sarsaparilla ; especially if the amendment first observed from the tonic begins to be less rapid, or there is a slight disposition to fresh ulceration.

In some persons other tonics will agree well : bark and nitric acid ; nitric acid alone ; a drachm of the strong nitric acid daily, in a pint of water, with some syrup. Whatever you give, however, must be accompanied with good diet and pure air, if possible.

Where there is the great restlessness and sleeplessness I alluded to, you may give your patient five grains of soap pill with opium, and three or four grains of extract of colocynth, or eight or ten grains of extract of hyoscyamus, or conium, every night ; and he will require occasional doses of purgative medicine, such as rhubarb or colocynth.

For your local applications there are none better than lime-water, or black wash, which may be snuffed up or injected several times a day, with very great comfort to the patient—the local pain being checked and the discharge diminished under their use ; or you may direct a lotion consisting of about one-fourth of a grain of oxymuriate to an ounce of lime-water, or of common water, if more stimulus is desired ; or half a grain of sulphate of zinc, or diluted red wash, or sulphate of copper. These lotions are especially required if the disease is high up in the nose, where other forms of applications

cannot be employed; but if the ulceration is situated in the lower parts of the nostrils, you may use a pencil, or a bougie, with lint, with bismuth or oxyde of zinc ointments, when there is a good deal of irritation; and subsequently some one of the mercurial ointments I have before recommended, or stronger solutions of lunar caustic, eight or ten grains to the ounce, or any other astringent.

Where the bones are affected in consequence of the destruction of the Schneiderian membrane, producing caries below it, the case is much more tedious and obstinate, from the slowness with which the caries of these soft spongy bones yields to treatment, and the indisposition (except in more healthy individuals) to any exfoliation of the diseased parts. In these cases a relapse will necessarily take place, in many instances, and a succession, perhaps, of several courses of medicine will be required before the disease is finally subdued. It is seldom, however, that the complaint is actually fatal, except in a few of those miserably neglected cases that we meet with in half-starved individuals of the lower classes of society; it is seldom, indeed, that the complaint is seen in any aggravated state except in persons of this class.

It appears, then, gentlemen, from the few remarks which our time has allowed me to make to you, that some complaints which commence in the lining membrane of the nose, may spread to the outer parts, as in Paisley and some cases now in the hospital. In another lecture I may, perhaps, make some observations to you upon these affections, in addition to those I have now offered to you of the internal ulcers of the nose.

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CLINICAL LECTURE
ON
POLYPUS OF THE NOSE,

Delivered at St. George's Hospital.

Gentlemen,—So many questions have lately been asked by some among you, that I have thought a few observations on polypi of the nose would form an useful subject for to-day's lecture, particularly as you will often have cases of this disease under your care in private as well as in public practice.

Polypi are morbid growths of the mucous membranes, which are connected

by a root or pedicle, more or less broad in proportion to the body of the tumour, which occur in various parts where these membranes are near their external communications, as in the rectum, the fauces or larynx, or the nose; and in the latter situation they may occur either in the nostrils or in the nasal cells; but it is to the former of these situations that I shall confine my remarks. You will find that polypi of some kind or other may be formed in any part of the higher portions of the nostrils, but they grow especially from the upper spongy bones and middle passage of the nostrils, and generally the outer surface is selected: it has been denied that they originate on the septum; but here you may see a portion of the septum, with a polypus growing from it; they probably, however, never occur in the lower part of the partition of the nostrils. The situation of the tumour materially influences, as we shall presently see, its texture, but at the same time they possess some original differences in their nature. Their form will be given them, as you may see in these preparations, by the cavity in which they grow, so that, at first round or oval, they become flattened by the sides of the nostril, and when they reach the floor of the cavity they will expand in an irregular figure towards the front or back part of the nostrils; the nose being not unfrequently flattened or widened by their presence.

Symptoms.—The presence of polypi in the nose will cause some common symptoms whatever their kind may be; namely, the effects of obstruction of one or both nostrils, so that a person will not be able to breathe except with his mouth open; the voice will lose its tone or sonorousness, and there will be a degree of uneasiness in the nose, with the same sense of stoppage as in a cold; and there is also sometimes a similar discharge of watery mucus: the patient snores at night, and may be awakened by thirst and dryness of the mouth, from its being constantly open in his respiration: he cannot smell perfectly, if at all, because the air cannot be drawn through the nose, and for the same reason his taste is impaired, because that part of the sense which appreciates flavour is lost or impaired, though he still possesses the sense of common taste and touch in the tongue; sometimes the tears run over the face, though you will see large polypi, which do not at all obstruct the nasal ducts; sometimes again, if the polypus is far back in the nostril, deafness may be caused by its pressure on the eustachian tube, and occasionally deglutition is interfered with, as well as respiration, by the palate being pressed out of its proper position; finally, the effects of pressure may be of still more consequence upon the brain, by the polypus interfering with the circulation of blood, or affecting the base of the skull, so that heaviness, and sleepiness, and stupor, will take place, from which persons have been known to fall asleep on horseback, or a barber while shaving; and the unfortunate patient will have, as you have seen not long ago, rigors, delirium, or coma, or convulsions, by which a fatal result is occasioned. It is only to

some kinds of polypi, however, that the latter symptoms belong, and it is only in them that the bones of the face expand and yield, so as to cause the frightful deformity, of which examples have recently presented themselves to your notice, and which led a person, according to Alibert, to commit suicide after contemplating his own figure in the glass.

Diagnosis.—Many of the symptoms of polypi, therefore, being those of obstruction of the nostrils, may be occasioned by other disorders, ozœna, caries, and so on; and hence it is necessary to examine the nostrils, which may be expanded by a forceps or a speculum, so that the polypus may become visible, or if not, its existence may be ascertained by a probe or director; and in all cases you should endeavour to discover its form, and the situation of its root, by passing the probe round the body of the tumour. When visible, the polypus may sometimes be made to shift its position by blowing forcibly through the nostril; but if fixed, take care not to mistake scrofulous thickening of the Schneiderian membrane for polypus, and run the risk of extracting a portion of spongy bone; the opaque and white or pale colour of a polypus is very different from the red florid colour of inflamed and thickened membrane; and it is only in the malignant diseases of the part that much difficulty can exist, when a projection is visible. You have recently seen a man, a patient of Mr. Keate's, with a growth filling the aperture of each nostril; looking at first very like polypus, but on examination you found that it was confined to the lower part of the septum, which is not subject to polypus, and the red swelling on each side appeared to be the parietes of an abscess in consequence of a blow, of which I have occasionally seen instances; and he has left the hospital I believe nearly well after the discharge of matter. I have often known painful attempts to remove polypi, which really did not exist, by the use of forceps. We shall return to the malignant diseases presently; but besides them you will find that there are three forms of polypus of the nose of simple and innocent character.

I. *Vesicular polypi.*—In this kind of growth you will find the nostrils obstructed by a great number of grey or transparent vesicles (sometimes erroneously called hydatids or hydatid polypi), which are covered by the mucus of the nostrils in considerable quantity, and which contain a transparent watery fluid mixed with a small quantity of mucus, giving it a little tenacity. In this kind of polypi there is a copious discharge of liquid, as in cold, and they are excellent hygrometers, so that the patient will sometimes in dry weather be able to breathe pretty well, but in a damp atmosphere, interfering with the evaporation of the secretion, will find the cavities totally obstructed. Examine these polypi, and you find that they readily break down, discharging their contents, and leaving in the forceps a few

delicate shreds of fine transparent membrane; and the polypi are, in fact, great numbers of oval or pyriform bags hanging side by side, and continuing to form for a great length of time; fresh ones descending as fast as others are broken down. Sir A. Cooper, in speaking of these vesicular (or, as he calls them, hydatid polypi), says they occur in young persons; but it so happens that the few instances I have seen have all been in adults, so that they may probably form at any age: it is however much less common than the next species of polypi. The softness of the vesicular polypi prevents their occasioning any severe symptoms by pressure, but their numbers give the patient a good deal of trouble.

Nature.—There are two opinions as to the nature of these vesicular bodies; some persons, such as Portal and others, believing them to be enlargements of the mucous follicles, a kind of mucous encysted tumour; while Alibert and other authors believe the fluid to be in the common submucous tissue. It is difficult to explain the occurrence in either way: it is not easy to see on the first supposition why such numbers should continue to form for so long a time; and if mere infiltration in the mucous tissue, there seems no reason why the swellings should be in the form of a number of separate and regular bags of half an inch long or more, hanging side by side, instead of having the usual appearance of œdema or puffiness. On the whole, I am rather inclined to believe in the follicular origin, which is analogous to one form of polypus of the uterus, where the follicular vesicle attains a considerable magnitude, and the fine membranous bags are just what we should conceive these follicles would be when much distended in so delicate a tissue; at the same time I cannot say, as some assert they have done, that I have seen the orifices of the sacs. One thing I think is certain, that the occurrence of this form of disease depends on a constitutional cause. Mr. Abernethy (speaking of polypi generally), says that a person used to have some of them frequently extracted by Mr. Hunter and himself, till one day he gave him a lecture on his bowels, the consequence of which was that no more formed for several years, till a trifling return was caused by his being laid up by a broken leg. I cannot say that I think the general health has much to do with the formation of other polypi, but, with the vesicular species, I have always seen a pale muddy complexion, a kind of cachexia, which in other persons might have caused perhaps common ozæna, but in them occasioned this particular disease in the membrane of the upper part of the nostrils, in which part alone they are formed.

Treatment.—This being the case, their treatment must be constitutional in part; and the remedies which I have seen, I think, of much advantage in assisting the cure and preventing a relapse, have been sarsaparilla and liquor potassæ or hydriodate of potassa, or, with both together; or, with small doses of bichloride of mercury. I have also administered small quantities of

arsenic with apparent benefit; and bitters with alkalies and small alterative doses of blue pill.

With regard to local remedies, it is no use in general to extract these fine membranous substances; but the treatment is essentially the application of astringents: if, indeed, the nostrils are very much blocked up, you may first break down some of the vesicles to make your applications more readily act, but otherwise it is unnecessary to resort to a very painful, or, as Abernethy calls it, a blackguard operation. The best applications are the sulphates of zinc or alum, or copper, or the corrosive sublimate, which may be used of considerable strength as astringents in solution; they may be snuffed up the nostrils, or injected with an ivory syringe, or a piece of lint may be inserted into the nostril, and the solution dropped in while the patient's head is held back. The nitrated quicksilver ointment is of much service to the membrane after the polypi are destroyed, which may be applied by means of a little lint on a bougie as high as it can be inserted. You may also use the copper or zinc sulphate in powder on a piece of lint; and I have used burnt alum, alone, or mixed with a little savine powder, which the patient can snuff up the nostril; but on the whole I prefer the ointment and lotions, which I have mentioned. Some recommend the muriate of antimony or liquor potassæ; care being taken not to touch the sides of the nostrils, which are not ulcerated however by pretty strong solutions. These remedies must be continued for some time after the nostrils seem to be clear; and when the patient is careless I have known him come repeatedly to the hospital for many years, till he has tried all the surgeons in succession.

II. *Gelatinous polypi.*—The next form of polypus is a more solid growth of the mucous membrane, generally of the middle passage of the nose towards the outside, though I have also seen it in the cells and in the æthmoid bone: its appearance is seen in several preparations on the table, and you have also seen it in a patient who has just left the hospital. This was a man, Jesse Green, 50 years of age, admitted into the hospital on May 20th, in Wright Ward; and our notes say that he has had obstruction of the nostrils for thirteen months, and lately has had a yellow discharge from the nose. There are several gelatinous polypi in each nostril, which appear to be attached high up, probably to the spongy bones, the nostrils are completely obstructed, and no air comes through the nose in blowing forcibly; he is also unable to smell or to speak freely. On the 21st I extracted a large mass of gelatinous polypus from the right nostril, and several portions from the left, and ordered a lotion containing sulphate of zinc 3iss. to ℥viij. of water, which was afterwards increased to 3iij. of zinc. This he was still unable to snuff up, and it was therefore injected. On the 23rd some more fragments of the brittle polypi were extracted. On the 25th the right

nostril seemed quite free, and some more was extracted from the left; one polypus of firmer texture than the rest coming away. On the 28th both nostrils seemed free, and he has since left the hospital apparently well.

You had then an opportunity of seeing the polypus in the living person as a dull white mass, covered by fine membrane with a yellow mucous secretion; and when extracted you perceived that it was a soft brittle substance, like firm jelly, consisting of infiltration of serum and lymph in the mucous and sub-mucous tissue, having a few delicate fibres running through its substance from the root to its circumference; and if these fibres are of unequal length they give an irregular or serrated appearance to the surface of the tumour, which however, as you may perceive in the preparations, acquires its shape chiefly from pressure, and is therefore commonly broad and flat at the sides and expanded below, while in the early stage it is oval or globular before it has been compressed. In the interior of the polypus may also be seen a few delicate vessels, seldom of much size. The gelatinous polypus is a solid mass of mucous membrane expanded by effusions in its tissue, not in separate bags like the vesicular polypi, and evidently not consisting of condensation of vesicular polypi, but different from its first origin, as well as in its usual situation; the vesicular polypi being only formed high up in the nostrils, and the gelatinous generally in the middle of the outer part. The gelatinous polypus is apparently a much more local disorder than the other, growing in healthy persons, frequently in children, though as you have seen it occurs also in adults. The gelatinous polypus is frequently single, so that if removed entirely with its root there will be no return of the disease: I extracted this, for instance, six years ago from a boy, and I know he has been quite well since that time. Sometimes there are thought to be more than there really are, in consequence of a single large polypus being extracted at several operations in separate portions, which are supposed to be distinct polypi; still, you must not too confidently promise a cure, as two or three tumours may be present at once, or may successively appear, though it does not so much depend on a constitutional cause as the vesicular polypi.

Treatment.—The treatment of the gelatinous polypus is essentially mechanical; sometimes, indeed, if it is a soft one, some one of the astringent applications, before spoken of, for the vesicular kind, such as the strong solutions of zinc or copper, will effect a cure; but I have most frequently seen them fail: they are of great service, however, as you saw them used in Green, to assist the cure and prevent a return, and you may try them occasionally without operation, in which case you must use them stronger than the lotion employed in him, as they occasion less inflammation by themselves, than when used with the forceps. Green, you observed, had on one occasion a good deal of pain about the forehead and nose. You may dissolve

as mueh a 3j. of sulphate of zine, or 3ss. of sulphate of copper, in an ounee of water, if a weaker lotion has little influenee.

The forceps should be rough, so that they may not slip off, and you should endeavour to plaee them as near the root as possible, the situation of whieh you will ascertain previously with the probe, and having laid hold of it, you twist the polypus off by turning the forceps, at the same time that you draw it down. In Green there was no bleeding to signify, nor is there in any case of gelatinous polypus; a littlc eold water, or a little pieee of blue lint, will easily stop it, if there should be. The lotion, or ointment, or powder, which were before spoken of, arc to be used when the bleeding has stopped; and in a day or two you examine the nostril again, and extraet what may still appear to obstruct it, and let these applieations be continued for some time, if there have been several polypi. In many eases, however, a single operation may be all that is required, and the root being perfeet, nothing need be done subsequently. Sometimes, as you pereeive in this preparation, a little pieee of bone comes away with the root of the polypus; but as the bone has no share in its formation, it is quite as effeetual to draw away the membrane from whieh it grows.

III. *Fibrous polypus.*—The fibrous, or sarcomatous, or fleshy polypus, is a more firm and solid, and a morc highly organized tumour than the others; consisting of a fibrous tissue, with larger bloodvessels, and with very little appearanee of fluid effused in its interior. It is sometimes so solid as to eut with diffieulty, and with a sound like that of fibrous eartilage, but it does not often attain so much density as this, and the pedicle is usually more eondensed and fibrous than the expanded part of the tumour. Like all fibrous tissue, it may undergo eonversion in part into osseous matter, and I have seen one partly eartilage and partly bone, while another by its side has been of the usual texture. When you examine it in the living person it is seen to be of a reddish white or brownish eolour, and is covered by a thin membrane, which is sometimes as smooth as a serous surfaee; its seeretion also being more watery than what is eommonly seen on the gelatinous polypus. Like the gelatinous polypus, it is generally situated on the outside of the nostril, but is more often seen further back, attached to some part of the posterior nares; perhaps it never grows on the softer structurc of the æthmoid bone, but is now and then found in one of the eells. The fibrous polypus is often single, but there are sometimes several; it is, perhaps, always formed in adults, at least I have never seen one in a ehild.

Texture.—By many persons the fibrous polypus is distinguished from the other speeies, but not by all; by Sir A. Cooper, for instanee, the fleshy polypus is spoken of with the gelatinous kind; by Boyer, whose deseription of polypus is on the whole the best I know, the vesicular and gelatinous speeies are included under the single name of mueous polypi, while fleshy

polypi are spoken of separately, and divided into scirrhous and simple fleshy polypi, though curiously enough the characters of the two are exactly reversed. John Bell, and others, speak of these distinctions as imaginary, and think that the apparent differences are from different stages of the same tumour being separately described.

It appears to me that neither of these opinions is quite correct: sometimes, doubtless, the gelatinous polypus may gradually become more solid, till it is fibrous in texture; but in other cases a very small polypus is quite solid from its commencement. Sometimes, therefore, the fibrous polypus may be the sequel of the gelatinous; but in other cases it has no gelatinous condition, and in no instance can either form of disease be the sequel of the vesicular species. The difference between the fibrous and gelatinous polypus appears to me to arise from the textures which are affected; if only the mucous surface, then the gelatinous polypus will be the form of tumour; but if the whole thickness of the membrane is implicated, that is, the attached surface, which is the periosteum of the bones also, as well as the free mucous surface, then the polypus will be fibrous; sometimes, consequently, in the first instance; sometimes only in a later stage, when the diseased action has spread to the more firm tissue at its base. Thus, if a polypus grows from the upper parts and middle of the nose, where the fibrous tissue is scanty, it is generally gelatinous; but if it be far back, towards the fauces, where there is a good deal of fibrous texture, the polypus is almost always fibrous: here, for instance, is a fibrous or fleshy polypus, removed by ligature from the back of the nostrils, in a patient from whom gelatinous polypi had previously been extracted from the anterior part of the cavity. Probably, from the same reason, the texture is softer in a polypus of rapid growth, and fibrous in one that has proceeded more slowly; and again the base is more fibrous than the pendulous part, being nearest to the fibrous tissue. The same causes may, therefore, give rise to both gelatinous and fibrous polypi, and the same patient may have both kinds at once: both are of the same nature, as far as malignancy is considered; but although both are of innocent nature, their difference of texture make the one a more important disease than the other.

Symptoms.—The fibrous polypus alone produces those severe and fatal effects which have been described, because it is only in this kind that there is firmness and vascularity enough to make the parietes of the nostrils yield to its pressure, in the way you can see has been done in this preparation. The bones, you perceive, are first expanded and altered in shape, the ossific deposit still going on in proportion to the interstitial absorption; then they are pushed aside and separated from each other, or the apertures of the nasal bones, or the cells, or the nasal canals, are widened and distended, and filled by projections of the tumour; then the growth is still more rapid, the bones are absorbed, but no fresh ossific material is allowed to form, and the polypus

comes in contact with the skin or other textures in the face; the septum is absorbed, the nasal bone destroyed in part, or the orbit, or maxillary, or palate bones, are in great measure lost; finally, the skin becomes distended and discoloured: it is first of a dark red, then of a livid colour, then it is ulcerated, and the polypus fills up the ulcerated aperture, and the edges of the skin being everted and covered by thick florid granulations, and the projecting polypus being also vascular and fungous, and the surface bleeding as vessels are opened by ulceration and sloughing, the whole disease bears a very strong resemblance to a malignant tumour of fungous character. You have some of you had an excellent example of this fatal stage of the disease, in a patient under Sir B. Brodie's care, just a year ago, and you can here examine the nature of the tumour.

This was a man, 47 years of age, a gardener, who was admitted into the hospital, July 7th of last year, whose case was thus described. His nose is much distended and enlarged by a tumour which fills the whole of the anterior nares. The tumour projects forwards from the face, stretching the parietes of the nose over it, and protrudes slightly through the anterior nasal openings; it is largest on the left side, and somewhat overlaps the eye. The nose has given way on the left side, and a fungous excrescence, of rather a brain-like appearance, about the size of a nutmeg, has protruded. The tumour is soft and elastic to the touch; the surface, where it is exposed, appears raw, and covered with irregular fungous granulations, disposed to bleed when touched, but not very painful. A probe can be passed round the tumour, between it and the parietes of the nose, in every direction, excepting on the left side; where it protrudes through the side of the nose, there are some adhesions between the tumour and the skin. The tumour does not extend far back, and cannot be felt from the palate; the septum nasi is perfect below, but perforated above, the tumour filling the right nostril from the perforation.

He states that twenty years ago he suffered from what was considered to be polypus of the left nostril: he was able at first to blow it out: it had the appearance of soft spongy flesh, the same nearly as at present protrudes through the nostril, and it would bleed when so blown out. Seven years after its first appearance, it was extracted with forceps, and has been so twelve or fourteen times since; it bled after the operations, and plugging the nose was once employed: the last operation was about two years ago, and two or three pieces of bone were then torn away. The tumour, before the last operation, was confined to one nostril, but has grown rapidly since, and increased greatly while he was ill and confined to bed, the early part of last spring (from March to April), with what he says was a violent purging. He is much reduced in flesh, and has been getting rapidly thinner. He has been in the Sheffield Infirmary since the tumour has been increasing,

and has had lotions applied, but without benefit. No glands are enlarged. On the 20th, the tumour had increased, the ulcer of the skin had enlarged, and more fungus protruded, with much fever and irritation, and slight tendency to delirium. On the 23rd, he had severe rigors, with a pulse of 120, and the tongue became drier and browner. On the 26th, he was delirious again, with occasional rigors, and increasing debility. On the 28th he had a fit of convulsions, succeeded by coma, and he died on the 29th, in this condition.

Thus, then, terminated a fatal case of polypus of the nose, which resembled very much a malignant tumour before death; and you may see that the mass of disease is altered also, so as to be soft and brittle, and more vascular, and to look like a malignant disease. It is said, indeed, by Alibert and Dupuytren, that this softening of a polypus in its later growth does not extend to its root, but you may see here that it reaches quite to the membrane from which it grows on the outer part of the nostril. Still, however, I believe that the resemblance is incidental only, and that the tumour was a single fibrous polypus, though I certainly thought that it must be malignant, till I had examined the disease thoroughly after death.

The essential characteristic of a malignant tumour is, its power of contaminating other structures contiguous to it; so that in several of these really malignant diseases you may see the bones converted into the same structure, the cells filled with new growth, and every texture nearly alike in appearance: examine the preparation on the contrary from the patient whose history I have just read to you, and you may perceive that notwithstanding its advanced stage, the disease is still entirely confined to the mucous texture and its fibrous outer part, so that you can separate the membrane from the bones, and they are seen to be perfectly unchanged in texture, though altered in shape, and in part absorbed by pressure: all the cells are perfectly healthy, though their shape is somewhat changed; and even the mucous tissue itself, except where the tumour originated, was quite healthy, being only thickened and more vascular, as might be expected; and at one point you may see a small gelatinous polypus attached to the thickened membrane.

Here, then, twenty years elapsed, and yet no other texture has been changed, and even a longer time has been known to have passed, at the end of which the polypus has still been simply fibrous. Some obscurity has been given to this subject by perversion of terms, such as that I have alluded to of Boyer, but still more from cases having been quoted again and again by different writers as examples of polypi, which were really instances of malignant tumours of other kinds. We shall return to them presently, after I have spoken to you of the treatment of fibrous polypi.

Treatment.—You could not expect that so solid a body as a fibrous

polypus would be much under the influence of external applications, and therefore the cure is simply removal of the tumour by some means or other; and because not malignant a cure may always be anticipated, when the whole disease can be eradicated. The astringents before spoken of may, however, be here also used after the operation, to lessen the chance of the return of the polypus. The means of removal of a fibrous polypus are either extraction by the forceps, or its excision by knife or scissors, or its destruction by ligature; and the one you select must depend on the size and consistence and situation of the tumour. There is one precaution, however, which you should adopt, when you are going to operate on a fibrous polypus, which is unnecessary with the gelatinous kind; it is, always to have ligatures and lint, and a bougie, or other apparatus ready, that you may immediately resort to plugging of the nostril, if you find that there is any alarming hæmorrhage. Usually, indeed, the bleeding readily ceases by the use of a little cold water, or pressure by the finger or the forceps, for a short time, with a little plain lint, or lint dipped in solution of sulphate of copper; and it is said by Mr. Pott that he never knew any bleeding where the polypus was at all fit for removal; nevertheless, as there are several cases on record, where the polypus was evidently only fibrous, and yet the bleeding is described as having been alarming or frightful, it is prudent to be prepared for it beforehand, though it is not necessary (as some have recommended) to pass a ligature for this purpose through the nose in all cases before proceeding to extraction or division of the tumour.

1. *Extraction by Forceps.*—In the greater number of fibrous polypi, that is to say in those of moderate size, and of not very firm consistence, and without any broad attachments, the forceps will be the best means of removing the tumour, which may be reached in various ways, according as the root is accessible, and the tumour easily moveable or otherwise. Sometimes it may be torn away in the usual manner from the front; sometimes, although separated by the forceps introduced from the nostril, it is more easily pushed back, and then seized by the fingers or forceps from the fauces: if, for instance, the body of the polypus is rather large, and expands backwards, this is the best way. Sometimes, when wedged in the nostril, the finger passed behind the palate has been found to assist the forceps introduced from the front; sometimes the polypus can be more easily laid hold of by a pair of very much curved forceps, passed from the mouth behind the palate. In some cases two pair of forceps have been found useful, by which means the tumour, drawn forwards to a certain extent by one pair, has been more advantageously seized higher up by the second pair. When very large, Richter has recommended a divided pair of forceps, the blades of which may be passed separately on opposite sides of the tumour, and afterwards joined together. When the polypus has been of very large size, and

the nostril has yielded with difficulty, Dupuytren and other surgeons have divided the ala nasi with a bistoury, to prevent its laceration, and to facilitate the passage of the polypus—a proceeding, however, which can certainly be very seldom necessary.

2. *Excision.*—The fibrous polypus has frequently been found to be too firm to yield to the forceps, or its attachment too broad, or the polypus too large, to be embraced by the forceps; and, in such cases, it has often been cut off by scissors, or a knife. Here are some complicated instruments of Whateley's, to convey a ligature round the tumour previous to its division, which must (if possible) be quite unnecessary; and a common probe-pointed scissors, curved or straight, will do just as well, or a probe-pointed bistoury, part of which is covered with lint, or made like a hernia knife, in some measure, so as to cut only towards the end. The scissors can, of course, only be used towards either end of the nostrils, as they cannot be opened in the higher part of a narrow cavity; the knife can be employed for the higher parts; in either case, the polypus, after division, as near to the root as possible, is to be drawn forwards with forceps, or pushed back into the fauces, according to its situation and figure. When thus divided, the root has been described as being as hard as cartilage, so as to require much force to cut through it; and, in one of the cases for which Whatcley had this sheathed knife constructed, he found the root two inches wide where he cut it off. Where a polypus had been situated far back, an operator has divided the palate longitudinally, in order to extract it, which must be looked upon as quite unjustifiable, since the division of the tumour in more than one piece, which has also been done, would be a preferable plan. Sometimes the hæmorrhage has been found free from danger in cases of excision, but has been alarming in other cases; and in all operations by this plan on large fibrous polypi, it would probably be right to pass a silk previously, in order to plug the nose directly if the bleeding appears dangerous.

The knife or scissors have been employed in several cases after the forceps and ligatures have been tried in vain; but I have never done it myself; and I think the plan is inferior to the others, and is only to be tried when other means have failed, as it is probably open to the objection given by Sir Astley Cooper, of a return being more likely when the tumour is simply cut off than when torn or tied, besides the greater risk of bleeding.

3. *Ligature.*—The third plan, which is applicable to fibrous polypi, is the strangulation of its root by ligature; but you may readily imagine that this is by no means an easy operation in a deep and narrow cavity with unyielding parietes: it is, therefore, most easily done when the polypus is far back in the fauces, or near the anterior opening. Here is a polypus, which was tied by the simplest means, namely, the passage of a bougie into the mouth from the front, by means of which the silk was passed round the root:

the polypus itself was the size of a walnut before its removal. When passed round the root the wire or silk may be tightened by means of these common tubes, till it is separated, and if large, much pain and fœtor are occasioned, requiring the use of opium, and of chlorine or other lotions. It is, however, the passage of the ligature round the tumour which is the difficult part of the operation, and it would take me too long to explain the numerous plans which have been proposed for this purpose; for a description of which I will refer you to Boyer's works, and "Malgaigne's Operative Surgery." You can examine after the lecture the latest invention for this purpose, a somewhat complicated instrument, by Mr. Beaumont, which I fear, although easily used near the opening of the nostril, must be scarcely applicable to large tumours situated far up in so narrow a cavity; in which cases only is there difficulty in the operation.

It appears to me on the whole, that of these methods the extraction by the forceps is the best and easiest; but if the tumour does not yield, then that it may be tied, if far up, as the next best means, or cut off by scissors, if easily accessible, so as to insure the root being removed, or destroyed by caustic afterwards; and that if the ligature cannot be applied in some way or other, the tumour may then be cut off by the knife, though the most dangerous and uncertain plan.

Malignant polypi.—Under the term malignant polypus, as you find cases described in a variety of works, there appear to be included two different forms of disease.

IV.—*Cancer of the mucous membrane.*—The first is comparatively a rare disease, being a growth of a number of red vascular projections from the mucous membrane, not in the form of a polypus, but of an extensive growth from the surface, something like warts, though soft and spongy; it is analogous to cancer of the skin, in which the warty form is more distinct than in mucous membranes. It is a disease of old persons, and may affect any part of the nose or its cells, and may go on for several years without occasioning extensive destruction or contamination of the glands. In this preparation it affected the membrane of the antrum, and yet after five years spent in much suffering, with some swelling of the cheek, the cavity was scarcely filled by the tumour, and the bone scarcely at all affected. If the red projecting substance in the nostril is considerable, it nearly blocks up the cavity, by meeting from the opposite sides; and I have known the septum destroyed with cancerous ulceration, which spread up to the upper portions of the æthmoid and sphænoid bones, and occasioned a fatal influence on the brain. In the same manner, in the antrum, ulceration may spread into the nose or through the cheek, with the usual course of cancerous disease, but without much growth of fungous substance.

Palliatives are all the means that you can employ for a disease the eradica-

tion of which is in this situation scarcely a possible proceeding, after its nature has been discovered. If extracted on the supposition of its being polypus there is some hæmorrhage, and the new growth only proceeds the more rapidly from abortive attempts to effect a cure, and even caustics aggravate the pain and suffering of the patient, without being able to reach every part which is affected.

V.—*Medullary or fungous disease.*—A much more common form of malignant disease of the nose is the fungous or medullary kind of tumour, which is not confined to any age ; you have lately, for instance, seen one at the age of four years, and another in a woman of forty ; it is, however, more common in young persons than in those advanced in life. Its progress, to a certain extent, was seen in the woman I have just alluded to, a patient of Mr. Keate's, in whom the disease appeared first, about a year ago, like a polypus in the nostril, and was extracted two or three times with some hæmorrhage, and it used to bleed of itself when it first came. This ceased after a time, and lately the growth of the disease has been in other directions. You see it at the present time forming a tumour on the left side of the nose, just below the inside of the orbit, the inner canthus being not an unfrequent situation for its growth ; it reaches a little way across the lower part of the orbit, being firm and hard, except in the centre, where some whiter substance has formed like cheesy matter, while the rest is of a dark red colour ; it has pushed the eye-ball outwards and deranged the sight, though it is not yet entirely lost. It is not clear whether the tumour has yet filled the antrum, as the cheek has not yet bulged outwards, as it will do, perhaps, by-and-bye, in the same manner as the upper part of the bone is already affected ; but the bony palate is beginning to be pushed downwards by the tumour, and is a little altered in appearance. The other surgeons were asked to see her, and we decided that the disease had made too much progress to justify an operation, which could scarcely by possibility remove the whole, and would, therefore, increase the rapidity of its growth. The future progress of the case will probably be, that it will increase in various directions in the face and mouth, then it will soften and ulcerate, and bleeding will take place with unhealthy fungus, where the skin gives way : the patient's health is not yet much affected, but she will, probably, soon become thinner, and will lose her appetite and sleep ; she will have rigours, or perspirations, and die exhausted by irritation, or will have some affection of the sensorium by the disease spreading inwards, and occasioning convulsions and coma, as in our former patient with the fibrous polypus ; in short, it will run the course of fungous disease in any part of the body, changing the surrounding textures, and probably occasioning a similar disease in other parts of the body.

In most cases of malignant disease of this character in the nose, the disease is not properly a growth of the mucous membrane, like a polypus, but it

begins in some other texture, and reaching the interior, and being covered by mucous membrane, it assumes something of the appearance of that structure, from the usual laws of growth affecting tumours. Thus, in this preparation of fibrous tumour of the upper maxillary bone, you may see the external part firm and fibrous, and looking exactly like the gum in which it grew; the middle of the tumour is in great measure osseous, and the interior, growing into the cavity of the antrum, is soft, and exactly like a gelatinous or soft fibrous polypus projecting inwards with a narrow neck. Cancerous or fungous diseases may thus spread into the nose from any of the surrounding parts; in this cast you see a fungous growth filling the nostril, from cancer of the upper part of the nose; here you may see all the cells and cavities of the nose filled with fungous matter from similar disease of the cheek, the æthmoid and sphænoid bones changed, and the dura mater and even the brain beginning to be altered in their texture; and the fungus may even grow from the orbit, as in this preparation, where the medullary tumour filling that cavity has altered the bones of the nose; and you may see especially the upper spongy bone altered and enlarged, so that it might easily have been taken for polypus growing in that situation, and this also has extended to the dura mater and brain. Most frequently the disease commences in the maxillary bone or its periosteum, and the tumour grows in the antrum, and thence extends to the nose or inside of the cheek and orbit; first, where there is least resistance, and afterwards to the cheek and palate, where the parts are harder in texture. If the tumour grows in this manner from the antrum or bone, it immediately expands in the nostril, as if it grew from a pedicle like a polypus, because its growth is under no restraint, and its texture becomes also from the same reason softer and more vascular. I do not wish to deny altogether the existence of a fungous or medullary polypus, growing from the mucous membrane alone in the first instance, because I know no reason why it should not form there, as it does in the skin, but I have never seen one in its early growth, so as to be certain of the fact; and it is impossible to say, in a later stage, when all the other textures are altered, as in many of these preparations, in which of them the morbid action may have originated, though I believe it to be generally, as I have just remarked, in the bone or periosteum.

Diagnosis.—When a fungous tumour projects into the nostril, it is very often difficult to distinguish it from the fibrous tumour; it is usually softer and redder, and less smooth and shining on the surface, looking more like granulations; and it also bleeds more spontaneously, and the hæmorrhage is greater if it is meddled with, which circumstances seldom occur with a fibrous polypus till it has occasioned much distortion, and has begun to change its own nature by softening, while they may be observed very early in the

malignant fungus : later in the progress of the fibrous polypus, as we have already seen, it is very difficult to know one disease from the other till after death, when we may be tolerably confident, if the alteration is confined to the mucous membrane, and there is no sign of contamination, of which there is plenty of evidence in many of the published cases of supposed fibrous polypus, but really fungous disease of the bones.

Treatment.—In almost every instance you will do wrong to meddle with medullary disease in the nose, as, among the delicate and intricate textures in the nostril, you will scarcely ever recognize the nature of the tumour early enough to insulate it by removal from the uncontaminated parts ; and if any operation of this kind is unsuccessful, it is almost certain to accelerate the growth of what remains, by the local and general irritation which it excites. Where you are doubtful of the nature of the apparently polypous growth, it will be right to extract it on the supposition of its innocent nature, and not to repeat the operation if there is reason to alter this opinion. Sometimes this is not followed by much hæmorrhage, as in the woman under Mr. Keate's care, whom you have seen ; but this bleeding is sometimes enormous, and should at once be considered as strong evidence of the destructive nature of the disease. I have known a boy nearly destroyed in another hospital by the loss of blood after two unsuccessful attempts to extirpate a soft growth by forceps, after which my friend who was the operator tried to tie the external carotid artery, but was obliged by the boy to withdraw the ligature after it had been passed under the vessel ; he meant after this to have removed what bone seemed implicated through an incision in the nose, but I believe the operation was never performed.

Where there seems fair ground to hope that every diseased part could be removed, it would doubtless be proper to attempt the removal of the tumour, which some of you have had an opportunity of seeing done in the child from whom some of the preparations on the table were taken, an account of whose case I will read to you. The child, four years of age, was admitted under Sir B. Brodie's care, October 30th, 1839, with a firm inelastic tumour, larger than a walnut, distending the left nostril, and extending nearly as high as the inner canthus of the eye, and inferiorly as far as the alveolar process, and laterally there is an indistinct sulcus felt between the tumour and the malar prominence, as if the tumour had extended itself under the ala nasi over the maxillary bone, as far as the bicuspid tooth. The tumour does not project through the nostril, and the small portion that is visible at that opening is of a dark reddish ash colour. The probe may be passed between the tumour and the septum, and between it and the floor of the nostril, but on the outer side of the tumour, between it and the maxillary bone, it cannot be passed, as if prevented either by its attachment to the inside of that bone, or by its projecting from the antrum. The skin covering this side of the nose is tense,

shining, and slightly reddened, but not otherwise altered in appearance. There is a little purulent secretion from the inner canthus of the eye, and the tears run over the cheek; the right nostril is quite free, and the tumour does not extend so far back as to reach the fauces: the child is cheerful, and its health does not appear to have suffered.

The mother states that the first thing she perceived was "a small pimple" between three and four months ago, and that a short time afterwards a boy struck him, and his nose bled very much, and that this, which she calls a pimple, has gradually enlarged ever since, but the enlargement has been more rapid lately, and it has bled occasionally, and in the week previous to the operation the increase was very perceptible.

Now in this case the nature of the tumour scarcely admitted of any doubt, but as it was perhaps confined to the front of the nose, and there was no apparent disease of the antrum, it was thought right on consultation to afford the only possible chance of saving the child's life by endeavouring to remove the diseased parts, together with the bone, if it seemed affected. The tumour was therefore removed on the 9th of November, together with a portion of skin which was attached to the tumour where it most distended the ala nasi, and chloride of zinc was afterwards applied to the surface of bone, from which it appeared to grow on the outside of the nostril.

The part continued free from any return of disease for some months, and on the whole I think the operation prolonged the child's life, although it was ultimately unsuccessful, by removing for a time the local irritation of the tumour. Its structure, as you may see in the preparation, was that of a firm cartilaginous or gristly substance, like ordinary scirrhus, or like fibrous cartilage to a certain degree.

From the end of November to the end of January, when the child left the hospital, he continued to improve in health, and the nose appeared free from disease, except that there was a portion of bone to exfoliate from the action of the caustic. On February 19th he was readmitted, looking pale and anxious, and scarcely able to move any of his limbs, and he complained of much pain in them; the abdomen was large and tender; the skin hot and dry, and the tongue furred; and the nostril was full of tenacious mucus, with some coagulated blood. The friends stated that he had a fall a fortnight previously, since which time his nose has bled profusely on several occasions, and he has rapidly declined in health.

After this the paraplegia increased, and sloughing took place in the nose and cheek, with a return of morbid structure in the part; and towards the end of March the glands about the left ear enlarged, and a tumour was felt at the extremity of the sternum; and on the 12th of May he died.

On examination of the body it was found, as these preparations show you, that the tumour, wherever it may have originated, had produced a good deal

of alteration in the parts around the nose. You may see the maxillary bone softened, and the antrum filled with morbid growth; the sphænoid and æthmoid bones are similarly affected, with the dura mater lining them, and the cells are lost in the new growth, which fills all the upper part of the nose. The palate and left side of the mouth are in a state of gangrene. You may perceive some solid white matter extending in the sphænoid fossa to the temple, under the zygoma, and a little piece coming in contact with the sphænoid bone has produced a hole through it, so that the tumour formed a prominence in the interior of the cranium; every structure in this way yields before such a growth, and is implicated in it. The tumour at the end of the sternum is a firm, semi-cartilaginous mass, growing from the covering of the ensiform cartilage, and entirely surrounding the cartilage itself, which is not yet altered. This tumour is only one out of many others, I might almost say hundreds, which are formed on the bones: one of large size was formed on the periosteum of the inside of the ilcum, but they were most numerous along the whole line of the vertebræ, and along almost all the ribs, and you will see in the preparation that from the periosteum the disease has, in several vertebræ in this section, contaminated the osseous texture of the bodies of the bones, while the intervertebral cartilages have hitherto resisted the morbid influence. These tumours around and in the bones, gave rise, no doubt, to the paralysis of all the limbs. The vertebræ most affected were those of the back, and from their front part a great mass of the same hard substance, like cartilage or scirrhus, has projected forwards in the centre of the chest, whence it extended some way into the roots and centre of the lungs, and in some parts of the lungs there are separate tubercles under the pleura, of exactly the same appearance. I am not aware that any tubercles were found in any of the other viscera.

It is singular that the malignant influence should have been nearly confined to the bones, or rather to the periosteum of the bones, and also that even in those parts which were not immediately joined to the bones, so as to acquire their form of structure from this contiguity, the new formation should yet have been of a cartilaginous nature. It shows you, however, that because such new structures are cartilaginous, and bear much resemblance to the natural tissue, they are not therefore to be considered as belonging to a particular genus of tumours, lately spoken of by Müller under the name of "enchondroma." There are, no doubt, some diseases of the bones in which cartilage forms a large part, but while some of these are innocent cartilaginous tumours, others, as in this child, will possess other characters, and run through the usual course of malignant disease.

More frequently, when fungous disease appears in the nose, it has the usual characters of medullary or hæmatoid tumours, instead of the firm structure seen in this case. But whatever the variety, the operation is usually

impossible, or else the tumour is sure to return, and frequently several other parts of the body have the same disease developed in them. Some years ago Mr. Earle made a similar attempt, by incision into the nose, to remove what was considered a polypus, and had been previously operated on by forceps no less than 23 times in eighteen months, during which the tumour had been growing; but the disease returned in less than two months, and almost every viscus of the chest and abdomen, as well as many parts of the internal cellular texture, was found to be the seat of malignant tumours of medullary character.

I need hardly observe, in conclusion, that besides the injurious effects of repeated losses of blood to considerable amount, such injudicious attempts to eradicate what cannot be got rid of by forceps will only serve to hasten the fatal termination of the case, and that there are scarcely any cases in which the more complete removal by incision can be thought of as likely to afford a chance of success; the result will usually be such as you have seen, even when done early, as in the little child whose case you watched.

[*Medical Gazette*, vol. xxvi., pp. 697-731, July 24th, 1840.

CLINICAL REMARKS

ON TWO CASES OF

ANEURISM BY ANASTOMOSIS OF THE LIP

AND ON

NÆVUS OF THE CHEEK.

I WILL first make a few observations upon a disease of by no means frequent occurrence, and a very good example of which you have lately had under your notice in a woman who is going out of the hospital to-morrow.—I allude to that form of tumour called "aneurism by anastomosis," with which affection a patient was admitted under my care on the 12th of April, named

Lucy Anders, æt. 57, in Drummond Ward. Our notes for that day tell us that there is "a tumour about the size of a large pea, situated on the lower lip at the right side, about a quarter of an inch from the commissure; it is on the edge of the lip, and does not project into the mouth. The coronary arteries are of large size, particularly the right one, which, with one or two below it from the chin, lead to the tumour; the tumour is also formed by a

congeries of small vessels; the whole of it pulsates, and can be nearly emptied by pressure. The pulsation is checked by compressing the facial artery as it crosses the body of the inferior maxilla. It is of a livid red colour, and diseased vessels pass between it and a smaller spot which exists near it. It began six years ago as a black spot about the size of a pin's head, which she picked with a needle, but probably the needle did not penetrate its substance, as there was little or no hæmorrhage; she afterwards accidentally rubbed it, twelve months ago, with a towel, and there was profuse bleeding from it; it has gradually increased." In this case you have a disease to which the term "aneurism by anastomosis" has been applied, differing somewhat in its nature from ordinary nævus; which latter is a tumour consisting of many enlarged capillary vessels, with a small quantity of cellular tissue between them, and with a degenerated condition of the coats of the capillary arteries, so that they possess no contractile power, and are exceedingly liable to bleed upon the least injury. With this affection you are all familiar, especially with that form of nævus which occurs in children, in whom it is frequent, being most commonly congenital—though it sometimes commences at a later period. Such a congeries of capillary vessels is sometimes mixed with numbers of small cells not communicating with the blood-vessels; and these occasionally increase to a considerable size, as in a case you may remember my curing last year by puncturing and inflaming the cysts. But in adults it is rare, and from the pulsation in the tumour of our patient we must look for something more.

The point in which the affection we are considering differs from ordinary nævus is, that there is added to the morbid structure found in the latter disease an increased pulsation, and an enlargement in the adjoining arteries; which additions alter materially the nature of the tumour, and modify the means necessary for its removal; for it is of no use to make punctures by setons or vaccination, or endeavour to set up inflammation as you might do for the cure of an ordinary nævus,—nor does pressure cure them. But besides this disease, which is a pulsating nævus in fact, there has been included under the name of aneurism by anastomosis another disease, consisting of a varicose condition of an artery, beginning in one spot, first affecting the artery there, and then progressing until the vessels around it for some distance have become dilated, varicose, and softened, and the coats have lost their contractile power, being in structure little different from cellular tissue. Combined with this there is often a varicose condition of the vein, but without any tumour of the capillary vessels. I will confine my remarks, however, to the "pulsating nævus," rather than to the "varicose artery." This varicose condition of the arteries is never congenital, and arises, most commonly, from a blow or other injury in adults. The pulsating form of nævus is also seldom seen except in adults, but a common nævus

existing from childhood in a quiet state, is found at some future time to have the adjoining arteries enlarged, and thus to give a pulsation to the tumour and cause it to increase in bulk, while other nævi remain for life without this addition. Both forms of disease are almost invariably formed among the branches of the external carotid artery—in the face, or head, or neck, or in the tongue and orbit; and both of them may cause pain, headache, and disturbance of the general health, and both of them are liable to bleed furiously and dangerously, to the amount of quarts at a time, when the tumours ulcerate from disease or injury; even this small one, though growing very slowly, is described as having bled largely.

Observe next, that the pulsation in the tumour was checked by compressing the facial artery. It is singular that as long as the diseased part remains, no tendency to cure is generally manifested, although the principal artery going to it may have been tied. The plan has been tried with both large and small arteries, and, as an instance of the want of success with which it has been attended, I will recite a case published by Dr. Mussey, of Philadelphia, although, being an American operation (a country where many very wonderful cases occur), you must make allowance for a little of the Munchausen style of exaggeration, though doubtless the main facts are correct. In this case, a young man, in whom a nævus, existing from birth, began to have arterial pulsation from enlarged vessels after puberty, Dr. Mussey first tied the common carotid artery of one side, and finding that this produced but little effect upon the tumour, he tied, twelve days afterwards, the corresponding artery of the other side, leaving only the vertebral arteries to carry on the circulation through the brain. Notwithstanding all this, the pulsation in the tumour remained the same, although you are aware of the little communication the vertebral arteries have with the external parts. Afterwards, he proceeds to tell us, cutting carefully round the circumference of the tumour, a small piece at a time, he tied forty large arteries, the temporal being in diameter no less than five-eighths of an inch, and then dissected the tumour off from the pericranium, exposing a surface of twenty-five square inches; *i.e.*, the diameter of the tumour was about five or six inches. By these means he was enabled to remove it with success! Such a failure, however, shows you how little you can rely upon such an operation; and in fact, though it has occasionally succeeded in the orbit, it has almost always failed to arrest the growth of the tumour when growing elsewhere. But as a preliminary to excision, the arteries going to the tumour may be tied with great advantage when the tumour is very large. In one case, Dr. Gibson tied the occipital and temporal arteries supplying the tumour, and then endeavoured to remove the tumour, first cutting a small portion of the surrounding structure and tying the arteries, which bled so much that he was obliged to desist, and twelve days afterwards he insulated a further

portion, and ultimately, in a fortnight more, dissected off the tumour, leaving a wound, which afterwards granulated and healed. There are some situations where the method of operating by tying the artery is to be attempted; as when the tumour is situated in the orbit, cases having occurred in which a cure has followed the operation of tying the common carotid artery of the same side; or when it is situated at the angle of the jaw, where the proximity of many large vessels and nerves would make the operation by excision both difficult and dangerous. In such cases as these you may tie the principal artery first; it may possibly succeed; if it do not, it will, at all events, facilitate any operation which may be afterwards undertaken.

In our patient no means of this nature could be adopted,—for there were several arteries running to the tumour, and consequently its removal was the only available proceeding. Our choice lay between two methods of removing it,—viz., that by the ligature, and that by excision; I chose the former, as the least hazardous, whenever practicable, on account of hæmorrhage, and, as our notes tell us, on the 15th "a double ligature was passed through the entire thickness of the lip, to the left of the tumour, from without inwards, thus causing a loop to appear on the inner surface of the lip; the right-hand thread of the loop was then passed doubled through the lip on the other side of the tumour, thus forming another loop. By cutting these loops three ligatures were formed, and by tying the end threads across the free margin of the lip, and the middle one so as to include the base of the tumour, the diseased part was entirely cut off from all vascular connection with the surrounding structure." The ultimate effect of the operation performed will be to leave a semi-lunar cicatrix, similar to that which results from the removal of a portion of the lip by the scissors, when it is affected with cancerous disease.

On the same day our notes remark:—"Sickness came on two or three times, the patient having been placed under the influence of ether at the time of the operation." From the nature of the case interfering with the process of inhalation, the vapour was not administered to the same extent as in other operations; but the ill effects which resulted from even this limited use of it, and perhaps greater than we have seen in any other case,—effects extending, as our notes inform us, over a space of eight days (for it was not till then that she said she no longer tasted the ether), and consisting at first of headache, nausea, and giddiness,—show that it is a remedy not to be used on every trivial occasion, any more than you would employ a large dose of opium: for I consider it is not worth while to encounter these ill effects for the sake of removing a trifling degree of pain. In great operations, and in operations upon children, who bear it much better than adults, and whose crying and struggling are not pleasant additions to the cares of an operation, the etherial vapour becomes a valuable adjunct. Not only does it in these

cases remove the pain of the operation itself, but it takes away the effect of anticipation beforehand, and of nervous shock at the time, both of which are considerable, and soothes the system for some time. You have seen the ether administered in cases of strangulated hernia; but in these cases, from the great prostration which it produces, I do not think its use often advisable: neither do I in the removal of tumours from the neck, on account of the venous congestion likely to be induced; nor, for the same reason, and the chance of involuntary struggling, in cases where much delicate dissection may be necessary in any part of the body, nor if any illness exist likely to be attended with serious influence upon the brain, heart, or lungs. But in almost all operations, no one attending this hospital can doubt the very great value of this invention.

On the 17th, we read that "ulceration has commenced around the base of the tumour;" on the 20th, that "the tumour is hard and dry, of a black colour, with no pulsation in it." In a large tumour a second tying is often necessary, in order to prevent blood being carried by any vessels contained in the centre of the mass included in the ligature. I have seen a large nævus, or cancerous tumour, become black and dry, and the cutis dead upon the surface, and in the course of a few days the tumour has regained its vitality, because the loosening of the ligature by the ulceration of the circumference has allowed the vessels, situated in the centre of the base, to be no longer sufficiently compressed to prevent the blood flowing through them again.

In our patient the ulcerative process took place slowly; for it is not until the 25th, *i.e.*, ten days after the operation, that our notes tell us, "The slough came away this morning, leaving a depressed but healthy ulcer an inch and a quarter long. No bleeding occurred. The vessels of the lip pulsate nearly to the same degree as before the operation."

On the 28th the report is, "Ulcer healing at the edges."

On the 30th—"Cicatrizing rapidly. Distinct vessels can be observed in the granulations at the centre of the ulcer."

You will do well to bear this in mind, since an appearance of this sort may lead you to suspect that a portion of the diseased structure still remains, and with a view of destroying it you may apply caustic to a granulating surface, which would have healed more rapidly without any interference. These granulations of nævi are very large and prominent, and firm, and look exactly as if with so many vessels in them the disease must return, but yet they heal readily.

In our case the ulcer was left to itself, and the report for to-day, May 4th, is:—"Ulcer almost cicatrized." In fact, she is going out to-morrow; and when the thickening from the inflammation, and consequent deposit of lymph, has subsided, she will have a very useful and well-formed lip, and its

flexibility will of course be greater than at present, after the hardness has subsided.

We were fortunate in having no hæmorrhage, and in having arrived at apparently so perfect a cure. I say apparently, for the disease may yet return, and for that reason I have requested her to show herself at the hospital before she leaves town.

As the affection is a rare one, I will read to you another case, from which you may learn the difficulties you are likely to meet with, and the means you must employ to remedy them,—the case being attended with some risk and trouble, perhaps from the greater vascularity of the parts in a child.

Anne Cripps, æt. 6, was admitted under my care, on October 22nd, 1834, with a congenital tumour, occupying the same situation as in the last patient. There had been copious and repeated bleeding from the tumour, described as having been to the extent of a pint on three successive days. On the 30th, ligatures were tied round the tumour in the same manner as in Anders; and on Nov. 5th, the slough separated, removing, our notes tell us, the whole of the diseased part. On Nov. 7th there was a little bleeding from the ulcer, and on the 8th still more. On both these occasions the hæmorrhage was stopped by the application of nitric acid.

On the 9th the report is:—"The edge of the lip is more swollen and darker coloured, the margins of the ulcer everted, the surface broad, and bleeding from the slightest touch,—looking only like a common unhealthy ulcer.—Tinct. Benzoin. C. ulceri."

On the 11th, "Slight hæmorrhage continues, chiefly from two points, one of which is the mouth of a good-sized artery, and the blood spirts forth in jets. Surface of sore large, and has numerous unhealthy pointed granulations.—Blue lint ordered to be applied, with pressure, twice daily."

Hæmorrhage occurred on two or three subsequent occasions, but in small quantity; and on Dec. 31st, the notes are:—"The margin of lip on right side has nearly recovered its natural appearance, and is without pulsation, although the skin is a little darker coloured than it should be. The cicatrix is somewhat contracted. To be discharged cured." So far the case did well. But a month after her discharge Cripps came again to the hospital with a return of the disease in the right angle of the cicatrix. There was increased pulsation in the right, but not in the left coronary artery.

On February 12th, 1835, I removed with a sharp bistoury a triangular portion of the lip, including the diseased part. I preferred doing this to again using the ligature, as I thought I should by it be able to make a better formed lip. There was, as I expected, a good deal of hæmorrhage, but, the edges being brought together with sutures, it ceased without my having to tie any vessel.

On the 15th, "All the sutures have come away. There is slight ulceration

about the place of the one which separated last; the rest of the wound has healed by the first intention."

On the 19th, "Slight ulceration to the outside of the wound."

On the 20th, "Some hæmorrhage; said to be from the mouth, but probably from the ulcerated surface. The patient's crying caused an artery in the centre of the sore to bleed with a jet.—Strong nitric acid applied with a pointed stick, which stopped the bleeding."

On the 22nd, "No more bleeding.—Acid reapplied."

On the 26th, "Sore healing; no hæmorrhage; no undue pulsation of coronary artery."

March 7th, "Sore quite healed; and there is very little deformity left."

This case shows you how troublesome some of these tumours may prove, and the two together indicate that the operation for extirpating the tumour by the ligature is the one best adapted to the disease; although we may sometimes effect a cure by tying the principal artery going to the tumour, when we have sufficient power of cutting off the supply of blood, or when its size or situation forbid removal.

[*Medical Gazette*, vol. iv., new series, p. 938, May 28th, 1847.

LARGE NÆVUS OF CHEEK.—Frederick Yeo, æt. 18, admitted Jan. 14th, under the care of Mr. Hawkins, in consequence of a large nævus of the left side of the mouth and cheek, which produces so unsightly an appearance that he has never been able to procure a situation as a servant. The tumour began at his birth, but has lately increased a good deal.

The tumour forms a thick dark-blue mass, which, if pressure be made upon it, or the breath be retained, projects considerably at the left angle of the mouth. It is chiefly seen through the mucous membrane, which is extensively implicated; and just at the angle the outer skin has lately begun to have a red appearance, from diseased vessels forming in it, to the extent of nearly an inch. The tumour, when examined on the inside of the mouth, is seen to be about four inches long by two broad, and when the vessels are full, it is nearly two inches thick, and gives a sensation of a great number of varicose vessels under the membrane. It has no pulsation, and does not seem to have occasioned any increased action in the vessels around.

Jan. 22nd.—A method of cure was commenced, which was explained to the students present, by Mr. Hawkins, to this effect:—

After mentioning the nature of the disease, he observed that the most effectual method of treatment was to remove such tumours completely, which was done either by the knife or by the ligature. Either plan was possible in the present case; but I have not thought it right to employ them. I might have cut out the whole tumour, but it is so extensive—reaching even to the gums at its lower part—that there would have been great danger from

hæmorrhage, as the vessels composing it, being in a diseased state, and having no contractile power, bleed to an immense and fatal extent if not cut across; and if I had succeeded in avoiding this by completely getting round the tumour, yet so much of the cheek must have been removed, that the edges could hardly have been brought together, or at the best, not without very great deformity. On account of its danger, then, the knife is scarcely ever used; and whenever it is practicable, the tumour is removed by ligature,—an operation which you frequently see in the hospital. I might have used the ligature in some form or other, so as to have destroyed this tumour, but the deformity produced by it must have been very great—more, perhaps, than by the knife.

For similar reasons I have not attempted to destroy so large a tumour with caustic, which is sometimes used for this purpose; besides which, there is some risk of hæmorrhage from this method, and it is very painful and tedious.

If such a tumour is not removed, another method of treatment, which is sometimes used with success, is the obliteration of some of the diseased vessels by the production of inflammation. In some situations this can be done by constant pressure; but of course this is out of the question on the cheek, or indeed with any large tumour. Sometimes inflammation is excited in a young child, by making a number of punctures to inoculate the surface with vaccine matter; the method occasionally succeeds; yet it seldom answers with large nævi. Another plan which has been recommended is the use of a seton running through the tumour; and lastly, the production of inflammation, on the principle which I have just employed, and which you have seen me use also for the treatment of common varices of the ancle. You saw me use a narrow-pointed knife, cutting on its edge: an iris knife in shape, but a little larger, answers the purpose. This I passed through the skin at one margin of the tumour, and ran it under the skin to the angle of the mouth. I then drew it forcibly towards me, turning the edge towards the mouth; my fingers in the mouth regulating the force of the incision, so as not to cut through the inner membrane. By this I endeavoured to cut through the vessels which form the tumour, and I repeated the same incision in eight or ten other directions. You saw that no blood escaped externally, but the tumour became larger, from effusion within its structure; and I hope that by the coagulation within it, and the inflammation excited by the operation, the increase of the tumour may be checked, if it does not disappear. I conclude that the incisions will have to be frequently repeated before much good can be effected. If it fails to do any good, I shall probably pass a seton through it; but as a seton hanging out of the mouth, to avoid a scar, would be a dirty and disagreeable plan, I have first tried the present incisions.

Some little inflammation and pain took place; but the coagulum appearing to be nearly absorbed, Mr. Hawkins made some more incisions on the 31st, and again on the 10th and 17th of February, the effect of which has been an apparent diminution, to a small extent, however, and chiefly at the upper part of the tumour. During the incisions the vessels seem to be very tough, and to escape sometimes from the edge of the knife; but some appearance of bruise, and of swelling, shows that some of them are cut across each time.

[*Medical Gazette*, vol. xv., p. 815, March 7, 1835.

SUBSTANCE OF A CLINICAL LECTURE

Given at St. George's Hospital, May 19th, 1846.

1. Fibrous tumour of the upper jaw—Epulis. — 2. Fibrous tumour of the palate. — 3. Case of warts, nævi, and serous cysts.

I HAVE placed before you, gentlemen, to-day, the preparations from two cases which you saw operated on, on Thursday last: one of them is a fibrous tumour of the palate, removed by Mr. Keate; the other is a fibrous tumour of the upper jaw, which I removed myself; the latter is called an epulis, as being like the gum, and partly growing from it, and I propose to make this disease the subject of our first consideration; looking upon it, however, as essentially the same as Mr. Keate's tumour of the palate, and not as a disease, strictly speaking, of the gum alone, as you might understand from its name. I will read you the history of the first case:—

I.—Mary Tyrrell, æt. 30, was admitted, under my care, on the 8th of this month, with a tumour about the size of a large walnut, or rather larger, of an irregular form, growing from the alveolar process of the right side of the upper jaw, and attached, to all appearance, by a broad base, to that process, in a space intervening from just behind the canine tooth, as far back as the last molar. The tumour is vascular, and at times painful; a portion of it projects internally from the attachment of the alveolar process, and lies (as ascertained by the probe) in contact with the mucous membrane of the hard palate, but is not attached to it, whilst a smaller portion, also unattached, turns upwards over the middle of the external surface of the maxillary bone. The surface of the tumour below this portion is vascular and ulcerated, and projects downwards, and lodges, when the mouth is closed, upon the dorsum and side of the tongue. Although the jaws can be closed, the tumour very much impedes mastication and deglutition; it never bleeds, and is painful only at times. Her health seems to be good.

She has been subject to toothache on that side for the last two years, and at the beginning the pain was very severe; when the tooth had partly

loosened from its cavity in the socket, a small lump appeared, about the size of a pin's head, on the outer side of the gum, in the situation of the second bicuspid or first molar tooth; she picked it off, but in one or two months it appeared again in the same place, and has been since growing to its present size; she had one bicuspid and a molar tooth removed by a surgeon about three months ago, which were sound and not loose, according to her account, and a decayed stump was also extracted a day or two after her admission. The tumour has much increased in size lately.

It is said by some surgeons that epulis is more common in the lower jaw, but there are before us several specimens of the disease from either jaw, and I have myself seen and operated, I think, on nearly an equal number in the upper and lower jaws; so that I do not know that it is more frequent in one than in the other.

It is said, also, that this tumour is generally seen in children or young persons; I have myself seen it several times in children, but the majority have been adults like our present patient, and like several of those from whom the tumours on the table were removed—30, 40, or more years of age; it is probable, therefore, that there is nearly an equal number of young persons and of adults subject to its formation.

If you examine the tumour on the table, you will perceive that it is solid and firm, and distinctly fibrous, both to the naked eye and under the microscope, the fibres in the centre being evidently nearly perpendicular to the surface of the socket from which it derived its origin; this fibrous structure is most dense in the centre, and becomes softer and mixed with more granular structure towards the circumference, where it is covered by the mucous membrane of the gum, which is in some parts warty and very irregular. When you remove such a tumour, you may find the surface of the bone from which it grows scabrous and irregular, or with spiculæ projecting into the base of the tumour, the bone itself being hard and dense, so that you find it useless to endeavour, with a sharp chisel (as I tried in vain in my patient), to shave off the outer surface of the bone. In the other tumour, removed by Mr. Keate, some spiculæ of bone projected into it from the bony palate; its fibrous tissue is, however, rather less dense than in the one from the alveolar process, and the mucous membrane of the palate seems quite free from attachment to it, instead of being a part of the tumour, as in the epulis.

Sometimes, as you would expect in a tumour essentially connected with the bone or periosteum, you have spiculæ of bone in the centre of the tumour, separate from the surface of the bone. Here, for example, is one attached only by a pedicle to the gum, in the centre of which is an osseous nucleus. The natural course of change of all fibrous tissues in their transformation, is to have a deposit of bone, as you may see in fibrous tumours of

the uterus, or other parts; *à fortiori* you might expect that fibrous growths of the periosteum or bone would have a tendency to some ossific deposit. I regard what is called epulis, then, as a fibrous tumour of the bone, generally of the surface of the bone, which presents much of the appearance of the gum, because it grows into the gum, and all tumours are inclined to resemble in their structure the tissues in which they form; there is a little difference, therefore, between these two fibrous tumours of the gum and palate, and between them and fibrous tumours of the cellular tissue or uterus, or glands, or skin. Look, again, at this preparation of fibrous tumour of the upper jaw, which was removed by Sir Benjamin Brodie, which has affected all the thickness of the bone; the outer part was to all appearance a tumour like that of our patient—an epulis; the centre is almost solid bone; and the interior, where it projects into the cavity of the antrum, resembles a mucous polypus, because the mucous membrane is changed on the inside, as the gum is altered on the outside, during the growth of the tumour; the disease having commenced, according to the evidence of pain in the centre of the bone, some months before it projected externally. And another confirmation of this opinion of the origin of epulis from the periosteum and bone is given by what you saw in this very case of Tyrrell's, namely, that the tumour occupies the whole cavity of the alveolus, where there is no gum, and is quite fibrous in the centre; the circumference alone having the appearance of gum, where it approximates to that texture.

You may have remembered, what our notes specify, that the tumour was vascular; it was of a red colour like the gum, which is well seen in this drawing, which I had taken from the patient from whom I removed this round tumour with central bone; and you can press out the blood, and see it return again slowly as in the natural structure of the gum. Yet, although well supplied with blood, it often grows very slowly. I had this cast taken from a woman, 30 years of age, who was under Mr. Keate's care in the hospital, with a tumour of the lower jaw, which began as long as eighteen years previously, and it was removed five years afterwards, without having grown larger than a pea: it was removed again eight years after this by a second operation, when as large as half a walnut; and in five years more had attained no greater a size than you now see; in the third operation a portion of bone was removed by Mr. Keate. In our patient the tumour became larger than in this case, in less than two years, and was rather unusually rapid, but still was little ulcerated or altered. As it proceeds, the tumour grows more rapidly, and is softer and more vascular, and ulcerates, and has irregularities from the pressure of the teeth; and the ulcers are liable occasionally to become sore and painful, and to bleed slightly, and form a fungous growth, something like that of a malignant tumour, and they are sometimes described as being carcinomatous.

I do not believe, however, that there is any reason to think that fibrous tumours, either of this or any tissue, have a carcinomatous nature; or that even when they ulcerate extensively, and may be fatal from irritation, they have the power of contaminating the adjacent tissues, or of affecting the general system by absorption. In this drawing of a very large fibrous tumour of the uterus, or polypus as it is termed, you may see great vessels and cells in its interior, and the irritation of it destroyed the patient, but no part showed evidence of malignant growth.

This fibrous tumour has cells within it of some size, and the outer portion of an epulis, when growing quickly, may have a few cells developed, although in our patient there is only a little greater softness of the outer parts of the tumour. When not condensed, a fibrous tumour may have very large cysts, as in a case where I tapped a woman with what appeared like ovarian tumour, and removed fifteen pints of fluid, which proved, on examination, to be secreted in a cyst of a large fibrous tumour of the uterus, which had several other cysts of smaller size within it. In fibrous tumours of the interior of a bone, also, very great cysts are sometimes developed; but in the epulis even small ones are not common.

Our patient informs us that she suffered much from the toothache before the tumour showed itself; and it seems probable that the irritation of unsound teeth may sometimes occasion the growth, as any source of irritation may do in other textures; but it does not appear that this is often the case, for it grows sometimes from the outside of the alveolus, away from the teeth, and pushes them aside, while they continue perfectly sound; and therefore the pain attributed to the teeth, and often leading unnecessarily to their removal with the view of curing the toothache, is really in many instances owing to the growth of the tumour, and not the tumour to the irritation of the teeth.

Like almost all solid adventitious structures, an epulis is not much influenced by any remedies you can employ, and as it occasions considerable inconvenience and deformity, as you have witnessed in Tyrrell, and as there is danger of its affecting more and more of the bone to which it is attached, and may in time become unhealthy and ulcerated, its removal should be recommended at an early period. The steps necessary in the operation depend on the size and situation of the tumour, and its connection with the parts around; but do not forget always to direct your attention to the bone itself as the source of the disease.

1. Suppose that the tumour affects one lamina only of the alveolus, either the outer or inner, with the socket perfect, and the teeth sound, and the base a narrow one; it may be sufficient to cut off the tumour down to the gum, and with a sharp chisel to shave off any little spiculæ of bone which are prominent, and watch very carefully for any sign of unhealthiness in the

granulations, and if there be any a day or two afterwards, to touch the surface of the bone from which they spring with nitric acid, or some other caustic, of which I will presently speak.

2. If the inner surface of one lamina is affected as well as the outer, so that the tumour pushes the teeth aside, or passes between them, so that the surface of the bone cannot be got at, the tooth or teeth must first be removed in order that the same proceeding may be successfully carried into effect. For example, this drawing and the corresponding preparation are from a patient of mine, a woman 40 years of age, in whom a tumour appeared between the left upper canine and bicuspid teeth, attached by a narrow pedicle just within the socket, ulcerated on the surface, and the gum a little diseased on each side of the root; it had begun two years and a half before, and nine months afterwards, when half its present size, it had been cut off, but grew again. I extracted the two teeth, which were separated, and excised the tumour and as much gum as was altered in appearance, and shaved off some of the outer plate with a chisel; once or twice afterwards the surface was touched with nitric acid, and I believe the disease was cured.

3. If both laminæ of the alveolar process are implicated, so that the tumour rises from the bottom of the socket, caustic will not easily reach it so as to effect a permanent cure, though it may do so if freely applied; as, however, tedious exfoliation of perhaps more than is intended will occasionally follow the free use of caustic, a quicker and more certain cure is produced when there is a narrow but deep attachment in the socket, by removing a V shaped piece of the socket by means of a small key-hole saw placed on each side of the diseased piece of bone, the two incisions meeting at an angle as deep as appears advisable, and a pair of forceps will break off the portion when almost insulated. The remaining bone, when thus sawn, is too well supplied with blood to exfoliate and it readily granulates so as to fill up in great measure the place of the bone which is lost.

4. If there is a still deeper disease of the bone between its lamellæ, so that several of the teeth are loosened or displaced, and a swelling of the bone itself, or of one or both its coverings, indicates the formation of the tumour within the cancelli, it becomes necessary to remove a considerable piece, as in some of the preparations on the table, in order that no disease may be left behind. In the lower jaw, the whole thickness of the bone sometimes requires to be removed by two perpendicular cuts of the saw, which may be made to half divide the bone, and then strong bone-cutters will break through the remainder, more or less being first cut by the saw, according to the age of the patient and the hardness of the bone; and it is quite surprising how little deformity is created by the removal of a portion of the whole substance of the lower jaw. In order that the saw may be conveniently applied, appropriate

incisions must be made in the soft parts; if the disease is situated in the chin, it may happen that the thickness of the bone is not too great, if the lower lip is lax and extensile, for the bone to be sawn and cut, and then dissected out, without any incision at all in the lip: and the same may be done in the centre of the upper jaw; but in most cases a semi-lunar incision is to be made below the chin, and the lip dissected up, for the saw to be applied through the opening, by which means the subsequent cicatrix is concealed by the dress to a certain extent. If the disease is at the side of the lower jaw, a curved incision is to be made along the basis, and the flap raised for the admission of the saw and cutting forceps, without interfering with the circle of the mouth, and the scar is much hidden by the cravat or the cap-strings. In every case the teeth should previously be extracted, as the saw will be impeded by any fragment of the dental substance.

5. In fact, however, the simple fibrous tumour, when situated in the lower jaw, need very seldom be removed with the bone down to the base of the jaw, especially in adults, as the new growth extends deeply in the cancelli less frequently in them than in children. A girl, 15 years of age, was admitted under my care into the hospital, with a spongy and ulcerated tumour of the right side of the lower jaw, extending from the canine to the last molar teeth, about three quarters of an inch broad, with indentations of the upper teeth upon it, looking as if all the molar teeth were buried in the tumour, but which, by her account, have never appeared. The swelling could be felt on each side of the jaw, as if reaching very near the basis, and it began about seven months before, having given her no pain. I removed it in the way that I have mentioned down to the basis, as it did not appear, on consultation, safe to remove less, and the semi-lunar incision of the soft parts healed by the first intention, the loss of bone being scarcely perceptible. Yet if you examine the preparation, you will perceive that the fibrous growth did not extend much below the bottom of the alveolus, and I might, in fact, have left the outline of the base of the jaw untouched. Generally the depth of the alveoli, or very little more, is all that is actually diseased, so that the removal of half an inch or three quarters of an inch in depth from the top of the socket is enough: but, at the same time, so little inconvenience is experienced by the loss of the whole thickness that you should not hesitate to do so rather that incur any risk of a portion of disease being left behind.

The mode of operating in such cases as these is this: a perpendicular cut is to be made in the jaw on each side of the diseased growth to the full depth of the part which you intend to remove; then you make a horizontal groove in the bone by means of Hey's saw in a line at right angles with the former cuts, and then you can cut off the insulated portion of bone by cutting forceps without the risk of the bone breaking horizontally beyond

the proper distance, the depth to which your horizontal cut extends being greater in proportion to the hardness of the bone. The cutting forceps often exhibited in the shops consist, like this, of two equal semicircles, with straight handles, like pincers, when, of course, it is impossible to get the branch within to the right place opposite the outer one; nor does the turning of the handles get them sufficiently out of the way of the teeth of the upper jaw; you can effect this object, however, by the inner branch being twice as long as the outer, by which means its inner extremity curves round the jaw to the proper depth within the mouth. Sometimes a cutting forceps, the branches moving like those of a pair of scissors, but somewhat curved, will answer your purpose, the bone, in either case, breaking up if the groove is made to admit one end of the forceps. A more effective instrument is this which I show you, recently made by Savigny, where two sharp cutting blades are placed opposite one another, one within and the other without the portion of bone to be removed, and then a handle turns a screw, which quickly forces the outer blade onwards in the groove made horizontally in the bone, and cuts it off with much power, and without any straining or irregular action of the hands, as in the use of the common cutting forceps; it is a very useful instrument in most cases of this kind, and removes the bone easily.

6. For the epulis of the upper jaw similar proceedings may be adopted, according to the size of the part to be removed, and incisions must be made according to the situation of the tumour; in the centre the lip can be raised without any external incisions; at the side the cheek may be opened horizontally, or a flap insulated and turned upwards to expose the necessary extent of the bone. It is very seldom necessary, however, any more than in the lower jaw, to excise more than the depth of the alveolus, or a little more, by a V cut, or by the two perpendicular cuts of the saw, and the separation of the diseased part horizontally by the screw-cutting forceps, which I have shown you. Here is a preparation of the upper jaw, which was removed; yet even here, although the tumour half fills the antrum, you can perceive that the orbitar plate might probably have been safely left.

Now let us apply these remarks to our patient, and see the reason of what I did in her case. It was obvious that the whole breadth and depth of the alveolus was implicated in the base of the tumour, since it overlapped both the palate and the outside of the jaw; but as there was no bulging of the bone above, it was not likely that more than the depth of the alveolus was affected. So much, then, must have been excised, to secure the patient against a return of the disease, but to make the necessary perpendicular and horizontal sections of the bone, an incision must have been made in the cheek, as the disease was too far within the mouth to be otherwise accessible. But then it was possible, by cutting off as much of the basis as could be reached, and subsequently applying caustic, that the origin of the tumour

from the surface of the whole depth of the socket might be destroyed ; and if only the surface of the bone was affected, that the disease might never return. As, then, this plan was not unlikely, though not certain, to effect a permanent cure, and as the disease, when it returns after being not perfectly removed, is often very slow in its progress, as I have already shown you, and as the nature of this fibrous growth is innocent, and not likely to be excited into rapid progress, as a carcinomatous growth is sure to be, by being meddled with without complete removal, I gave the patient her choice of what she would have done ; and she decided, as I should myself have chosen, I think, to run the chance of the disease returning, and then having the more sure method of operation practised.

In the operation, then, I insinuated the flat surface of the knife between the palatine projection of the tumour and the palate, and afterwards between the outer overhanging portion of the surface of the jaw, down to the root of the tumour, which occupied the whole breadth of the alveolus from one end of the tumour to the other, completely filling the cavity. The base being thus cut off to the level of the socket, I next removed a stump of another tooth, which was now exposed in the root of the tumour, and endeavoured with a chisel to shave off the surface of the alveolus, but, as is generally the case, the bone was too hard for this object, and I therefore left it for the application of caustic the next day ; and as a vessel of some size came out of the bone at the root of the tumour, and bled a good deal, I placed on it a piece of blue lint, and covered this with a pad of lint, which was kept pressed firmly by the teeth of the lower jaw.

The next day I conveyed some strong nitric acid, by means of a pointed piece of wood with a little linen tied on it, to the base of the tumour within the socket, till it bled too much for more to be applied on that day,

I used the nitric acid, but I do not know that it materially signifies which caustic you employ ; but in such a situation as this, within the mouth, you can more easily regulate the acid, as it does not spread beyond where you apply it, and even this effect you can directly stop by a little chalk rubbed on it. Potassa fusa, on the other hand, is very deliquescent, and is carried by the blood about the neighbouring parts, so as to injure them, even in spite of vinegar, which you should always have at hand to neutralise the alkali, by means of a little sponge or lint on a forceps or stick. The actual cautery would also do for a superficial part, but not for the hollow of the socket, and I doubt whether the nitric acid would easily have acted on the bottom of this cavity. I should therefore probably have applied a little chloride of zinc on a piece of lint, and forced it in by a compress of lint, just as I checked the haemorrhage by pressure, putting some soda or lime on the lint, to prevent the deliquescent salt from doing any harm. I found, however, when I next went into the ward, that the patient had gone home, impatient

to return to her children, and perhaps rather frightened at the idea of the caustic being repeated, now that she has, as she thinks, got rid of the tumour. It is probable, therefore, that the disease will return, for which she will have herself only to blame, as she has been informed of the chance she has incurred.

II.—The next case for your notice is a complicated one, which is headed nævi, warts, and aqueo-cystic tumour of the forearm; which you have seen in a young woman, Frances Connor, 17 years of age, who was admitted on the 8th of April, with this account, which I will read:—

She has a tumour, about the size of a large orange, at the upper part of the front of the left forearm, of a firm and solid texture externally, but presenting a very decided feeling of fluctuation internally. Above the tumour also is a small detached portion circumscribed, of the size of a large nut, with a perceptible feeling of fluctuation on pressing it. It was, in fact, rather too tense actually to fluctuate, though the existence of fluid was probable. This tumour is subcutaneous, as proved by the motions of the muscles of the forearm being perfect, but the motions of the elbow-joint cannot be perfectly performed, as the tumour in front presents complete flexion. The skin covering the tumour is of a darker colour than that of the sound skin, and is covered with a few small warty tumours; the veins are distinctly seen passing beneath the skin over the upper margin of the tumour, but are not seen below this part. This tumour is slightly painful on pressure, and pains her much on using the arm.

At the lower part and front aspect of the forearm, and separated from the upper tumour by a distinct interval of an inch in extent, is felt an elastic mass of soft substance of several inches in breadth and length, and nearly an inch in thickness, and having the same degree of solidity as in parts of the upper tumour, but not so painful. This also is subcutaneous, and the skin over it is covered in a much greater degree than the other tumour with a number of dark-brown warty excrescences, and spots of cutaneous nævi, of simple varicose vessels for the most part, the cuticle of which is very thin, so that they bleed from time to time spontaneously. The skin covering this soft tumour is of the same peculiar dark colour as the skin over the upper tumour, from the vessels in its substance and below it.

The whole of this is congenital, but the upper tumour was originally of the same thickness and feeling as the lower part; the lower tumour has remained stationary, while the upper has undergone a change.

This patient was first admitted as an out-patient of one of my colleagues, nine months ago, for an attack of inflammation and much pain in the upper tumour (which was supposed to be fat). This inflammation caused an increase of its size, but was relieved, and a fresh attack came on in March last, which has left it in the state described; the tumour has been blistered

and leeched, and the tincture of iodine and cold lotion were applied before her admission under my care.

Now, first, with regard to the warts present in this case; you saw that they presented the usual appearance of this growth of the papillæ, and that they were subject to the effects of inflammation of the skin, so that after I had induced inflammation by rubbing the cyst, they increased considerably in size, and were painful, and were disposed to secrete pus between their folds, and again that they lessened in size when the inflammation ceased. They give no trouble, however, commonly, and to our patient their appearance on the arm was of no importance, and I did not think it worth while to do anything further, particularly as the causties necessary to destroy so large a surface would perhaps have induced ulceration of an unhealthy character in the nævi below them, and when once begun in this structure ulceration sometimes spreads for a considerable distance; I have known the life nearly destroyed by an ulcerated nævus reaching as this does from the wrist to the elbow.

Next as to the blood-vessel disease, the existence of which was obvious from the colour of the subcutaneous structure visible through the half transparent cutis, which was itself also somewhat diseased, numerous varicose vessels being seen in points on the surface, their size varying from excitement or inflammation, and the increase of size from these causes ceasing, as soon as the inflammation terminated; you might have seen the points opened by abrasion, and you could squeeze out a portion of coagulum from the orifices again and again, as the vessels filled with blood; and this structure was evident both in the upper and lower swellings, and closely resembled the external appearance of a large nævus in this cast and drawing, in which the varicose points bled more than in this girl.

Now it did not appear to me that I was called upon to treat the disease of the blood-vessels in this case, which seemed much too extensive to be lightly meddled with, extending as it did over more than half the circumference of the forearm, and reaching nearly from the wrist to the elbow. It was a congenital affection, which the patient had now had for 17 years, and in that time it had not undergone any perceptible increase disproportioned to the increased size of the limb; the tumours gave her no inconvenience, as far as this structure was concerned, except where the vessels came in points to the surface, but a drop or two of blood from them occasionally was of no consequence, and the little abrasions could be easily healed with a slight touch of lunar caustic, a piece of which I desired her to have in her possession when she left us, for herself to apply to them.

But the upper part had for nine months undergone some change, which had made it become painful, and prevented her using the arm freely in consequence of this pain, and the increase of size it had attained during that time. Let me, then, next make a few remarks to you on the structure of

nævi, in order better to make you understand this alteration of the upper tumour, without my entering, however, in detail into the subject, and without any notice of their treatment.

First, then you may have observed what are called nævi flammei ; marks of various extent of the surface only of the skin, in which it is obvious that numerous superficial blood-vessels, chiefly capillaries, are enlarged and tortuous, and anastomose freely with each other ; the disease being generally stationary even when covering the greater part of a limb, or nearly the entire surface of the body ; varying in colour, however, so as to be bright red or purple, according to the condition of the blood, or the state of the circulation. Sometimes you see a single point only of arterial blood, somewhat prominent, with vessels ramifying unaltered in structure, around it, constituting nævi aranei ; at other times, as in our patient, points of varicose veins only come to the surface, and sometimes in great number if there is also anything below the skin of the same kind.

Secondly, and more commonly, you meet with cutaneous or subcutaneous nævi, or a mixture of both, constituting distinct tumours of greater or less thickness, varying in colour as arterial or venous blood predominates, if the skin is affected, and generally purple or dark, when situated chiefly below the skin as in this patient. These nævi obviously consist in general of tortuous and varicose and dilated capillaries, embedded in a rather tough cellular tissue, and you can empty them, or allow them to fill at pleasure, by varying the pressure upon them ; the coats of the vessels being perceptibly diseased, so that hæmorrhage from them is dangerous, while the vessels going to them and coming from them are in their natural state. Sometimes the veins coming from such a congeries of diseased capillary vessels are also varicose and dilated, so that you can feel them below the skin, just as in a case of varicocele ; at other times one or more of the arteries going to them are diseased also, enlarged and softened to a little distance, pulsating visibly or sensibly, or communicating also a pulsation to the whole tumour ; such an addition rendering them what John Bell has denominated "aneurism by anastomosis."

But, in the third place, this surgeon has asserted that tumours of the blood-vessels of this kind have within them numerous cells, with which the blood-vessels have free communication, as in the natural structure of the gills of the Turkey cock, or the corpus cavernosum ; and this description has been followed by Wardrop and other authors ; and Dupuytren, following the same idea, has given the name of erectile tissue to these new formations, from their resemblance to the natural erectile tissues of the body.

The structure of nævi, whether pulsating or not, has been, however, a disputed question. Certainly, I think, there is in general no such formation

of cells, but the tumour consists solely of dilated capillary and other vessels. Even in a remarkable case, which occurred in the London Hospital, and has been described by Mr. Curling, where large external tumours communicated with great masses of similar character in the chest and abdomen, the disease examined on this great scale consisted only of blood-vessels of various sizes in cellular tissue.

But, in some few instances, there is an appearance of irregular cavities, which are probably dilated veins, communicating with the course of the undilated veins, as they contain coagula, and which have only the appearance of cells, when cut across, in the same manner as the tortuous vessel, folded in the vesiculæ seminales, gives the form of cells to those bodies.

It is very seldom that an opportunity is afforded of examining a large blood-vessel tumour; I had the power of doing so in the case of which this cast gives a likeness, in which you see that the tumour was of several inches in diameter, and not less than two inches in thickness; it was congenital, but had much increased for some time before the patient, a boy of seven years of age, came under my care, and numerous vessels, which bled a good deal from time to time, had lately appeared in the cutis. I removed it by ligature, and in the section of the tumour on the table, and in the drawing also, you may see in addition to the usual vessels that several apparent cells exist. Now some of these cells were filled with coagulum; their structure appeared identical with the other veins, of which they constituted as it were aneurismal pouches. So that in this respect they resembled what has been described and figured by Bell and Wardrop.

There were, however, besides these, some other cysts, which contained only serous fluid, and which were to all appearance close shut sacs,—serous cysts; their size being about that of peas, one or two somewhat larger than this, and others smaller. Now all tumours may form cysts, particularly when they grow without pressure, as into a cavity; I have mentioned already even the fibrous tumour, dense as it is, having cysts, and even dilating so as to contain fifteen pints of fluid. In cellular tissue serous cysts often form; occasionally many in close proximity, forming a half-solid cystic tumour. Such, then, had formed in the nævi of our patient, and dilated to a great size.

The existence of cysts in this case necessarily complicated the diagnosis in some measure, and you observe that the notes say the tumour had been supposed to be formed of fat, to which the elastic cellular tissue and vessels of a subcutaneous nævus bear certainly some resemblance; and probably at the commencement the quantity of fluid in the cysts was smaller than on the patient's admission, giving an elastic feeling to the cyst when half-full, or an appearance of solidity if tense, instead of a sense of fluctuation. I remember a patient of Mr. Babington's, in whom there was similar obscurity, and

on dissecting out the tumour, a small encysted tumour, of the size of a large nut, was found entirely surrounded by a thin layer of the structure of nævus.

The appearance of fluid, however, was quite distinct on her admission; but from the inflammatory attacks, which she was said to have had for some months, I was not quite certain that it might not be purulent; for a chronic abscess in a new growth, such as a nævus, might easily be without redness or other sign of matter. I believed it was a cyst, however, and on the 18th, when I had learned her previous history, I punctured the upper tumour with a grooved needle internally where the sense of fluctuation was greatest, and about half an ounce of straw-coloured transparent fluid came away; and on the 15th it is stated that two small tumours had become more apparent above the elbow by the lessened size of the chief cyst, and seemed also to be cysts. On the 17th I punctured the same cyst again, and let out six drachms of the same fluid, and I now rubbed the cyst a good deal in order to inflame it. On the 20th I again punctured it, as it was refilling, and rubbed it still more, as well as the small ones above, which contained the same fluid as the other. The effect of this was, as the notes say, to make the tumour hot and red, and sore and painful; and the warts increased in size, and many spots of the vessels of the nævus were now seen on the surface of the skin like those of the lower part of the arm, and even these latter vessels became larger; but notwithstanding this, the fluid reformed in each of the cysts. I now therefore altered the plan in some measure, and on the 4th of May I again punctured the cysts with a needle, and rubbed them a good deal, and then I applied a compress over the tumour to bring the sides of the cysts in contact, and kept them so by a splint along the front of the arm, secured by strips of plaster and a bandage.

This treatment has apparently succeeded in perfectly obliterating or curing the cysts; no inflammation now remains in them; the various vessels of the cutis and the warts have returned to their former size; there is no pain or inconvenience in using the arm, or handling the tumour, which is quite soft and elastic like the lower part of the arm, except at one spot, which may possibly be a minute cyst at the lower end of it, deeply situated; but as I punctured it without seeing any liquid, it may only be a little condensation of the cellular tissue in that part of the nævus, such as is often felt in such structures. I have directed her to come again in a fortnight to show herself, after she has returned to her employment, which she has not been able to follow for above nine months.

The cysts appear to be obliterated, as I have said, but it may be, perhaps, that there is only a new action excited in the sac, by which the tendency to secrete fluid is destroyed; just as it is with regard to hydrocele, in which it does not appear necessary to produce adhesion of the sides by means of

organized lymph, though the membrane is not refilled after injection; at any rate, bring the sides of a serous cyst in contact, and even without inflammation the disease is sometimes cured, as I have seen in a cyst of the liver containing not less than three pints of liquid; still more may you expect a cure if inflammation be previously excited, as in our patient was done by friction.

Had not this plan succeeded, it was my intention to have made a larger opening into the cysts, and dressed them in with lint, which is another method of curing these serous encysted tumours, for sometimes it is necessary to obliterate them by suppurative inflammation, instead of the adhesive; indeed, an incision or a seton is not unfrequently required; as, for example, with encysted hydrocele of the cord, and what is called hydrocele of the neck, which can very seldom be cured by a less degree of inflammation. I was unwilling, however, in the forearm (indeed, you will seldom be justified in doing so in any part of the body) to resort to an incision till I had first proved that milder remedies would fail, because the inflammation of an abscess of any kind, in connection with the numerous muscles and tendons of the forearm, is liable to cause much impediment to their freedom of motion; it seemed, moreover, particularly undesirable in this case, on account of the connection of the cysts with the blood-vessel tumour, as unhealthy suppuration and sloughing to some extent would very probably have followed it.

[It is probable, from the observation of Mr. Holmes Coote, that the cysts thus developed in nævi may be formed at least in part by obliteration of some of the small veins of which they are composed.]

[*Medical Gazette*, vol. ii., new series, p. 1021.

CLINICAL REMARKS ON

SEROUS OR AQUEOUS CYSTS OF THE NECK.

I PROCEED to make some remarks on the nature and treatment of serous cysts, when they take place in the neck, which is a not uncommon situation for their development. It is the case of John Morgan, seventy-two years of age, or, as I was recently informed, seventy-eight, who was admitted into Harris ward, May 25th, with a large tumour occupying the right side of the neck; it is soft, has an even surface, and fluctuates distinctly; the trachea and œsophagus are pushed by it quite to the left side of the neck, describing a considerable curve; the vessels are pushed to the outside, at least the carotid artery can be felt pulsating along its outer border; the

sterno-mastoid muscle is also pushed to the outside above, and covers it in part below; and the omo-hyoideus can be perceived, when he swallows, crossing it obliquely, and it is covered on its inside by the sternal muscles, the sterno-hyoid and thyroid, so that it is only at its upper part that it comes very near the skin. The tumour moves freely with the larynx; there is no pain in it, nor any impediment to respiration or deglutition, notwithstanding the great curve described by the trachea and œsophagus. There is no apparent enlargement of the thyroid gland, and the tumour is large enough probably to contain six or eight ounces of liquid.

The tumour, then, is an *aqueous encysted tumour* in the neck, or, as it has been called by Maunoir and O'Beirne, who have given some very good descriptions of the disease when situated in this part, *hydrocele of the neck*. Considering its size, and the derangement of parts produced by it, it excites surprisingly little disturbance in this man; but I have known the tumour occasion by its pressure serious disturbance in respiration and deglutition, with bleeding from the nose and mouth, and affections of the brain, from impediment to the circulation above, and much action of the heart, and threatened suffocation, by its effects on the larynx and lungs. These varieties of effects depend not only on the size of the tumour, but much also on its situation, and the manner in which it is bound down or left unrestrained by the muscles and fasciæ, and other adjacent parts. Sometimes it is situated entirely on the inside of the mastoid muscle, on one or both sides of the neck, or in front of the windpipe, when its pressure will be great on the important parts there situated; sometimes it is partly to the outside of the sterno-mastoid muscle, or entirely to its outside, above the clavicle, when its effects are of course much less serious; sometimes it is only at the upper part of the neck, near the jaw, and sometimes it is found in all these situations at once.

The largest tumour of this kind which I had ever seen was one that I attended about a year ago with Mr. Langley, which had been growing for twelve years without relief, as the patient had been recommended by several surgeons of eminence to have nothing done to it, under the belief that it was a solid tumour. It probably had been much harder and more solid at first, but when I saw it there was no difficulty in recognizing the nature of the disease; and by means of a small needle I immediately evacuated full a pint of reddish serous fluid. At this time she was weak and emaciated, and nearly dying from its effects; she had for many weeks been unable to lie down, and even when asleep in the sitting posture was constantly awakened with the dread of impending suffocation; and occasional fits of difficulty of breathing urgently threatened her life. The tumour filled the whole space from the jaw to the clavicles, and projected so much forward that it was some years since she had been able to depress her

chin, so as to see any part of her person; it was very irregular in figure, globular portions projecting on all sides of the mastoid muscles, and one square prominence reached over the right clavicle upon the chest; and, from the anterior part of the tumour covering it completely, no part of the windpipe could be felt. She was nearly cured by the means presently to be mentioned, but she was carried off about six months afterwards by an affection of the chest.

On examination I found the sac nearly obliterated in every part, and the thyroid gland quite healthy, except one little portion of the right lobe, the size of a nut, which was hard and chalky.

This tumour had always been believed to be a bronchocele or enlargement of the thyroid gland, and the cyst in these tumours is often supposed to be formed by the growth of some one or more of the cells of that gland; but in almost every case the tumour has, as in that I have just narrated, nothing whatever to do with that body, and if situated near the thyroid gland, on the inside of the sterno-mastoid muscle, the cyst is precisely of the same nature as if it were on the outside of the muscle, with all the vessels between it and the thyroid gland.

Before operating on these tumours I recommend you always to puncture them with a needle to ascertain their contents; and this small needle, like a cataract needle, but somewhat larger, or a grooved needle like this, will generally empty the cyst, or nearly so, if you wish to do it, before proceeding to any other measures. You see, by the case I have mentioned, that the cyst may easily be mistaken for a solid tumour, especially if it is covered and bound down, as most part of the tumour of our present patient is concealed by thick muscles; and on the other hand a projecting portion of the solid thyroid gland may easily be mistaken for a cyst. A friend of mine once called me to see a lady on whom he had begun an operation on what he thought to be a small cyst, but he found so much arterial blood coming from it that he left her sister pressing on it while he came for me; we found it, on a little further exposure, to be a small piece of the spongy isthmus of the gland, and after tying a ligature round it, there was no further trouble.

In our patient, the part, even where nearest to the skin, is covered by some dense fascia, or else the cyst is of some thickness; but I have sometimes known the sac and skin so transparent as to allow the light of a candle to be seen through it, as in hydrocele of the testis. This was the case in a patient not very long ago in the hospital under Mr. Babington's care; but I do not recollect to have seen it thus transparent, except when it was on the outside of the mastoid muscle, between it and the trapezius above the clavicle.

Except where the sac is transparent, the needle is not only sometimes necessary to prevent the errors of diagnosis I have alluded to, but because,

where you have no doubt of the existence of fluid, you ought to know the nature of that fluid before you determine what treatment to adopt. There are, in the first place, cysts of *arterial blood* formed in the neck in connection with the thyroid gland. Sir B. Brodie was relating to me a day or two ago a case in which, on opening a cyst in this situation, he found it could not be emptied, but continued to pour out scarlet blood, which was easily stopped by pressure, and the fluid subsequently absorbed. The nature of the disease in such cases, and the necessity of the caution I am pressing on you, are shown in a case which occurred to Mr. Dalrymple, in which that gentleman, after opening one of them, lost his patient a few days afterwards by repeated hæmorrhages. The tumour was composed of several cysts, and the vessels of the isthmus of the thyroid gland opened into these cysts, and gave rise to the fatal hæmorrhage.

In the second place, there are cysts of *venous blood* occasionally met with in the neck, which, like the preceding, do not admit of the same free measures that may be used in aqueous cysts. Some of these have been described by Mr. Hey, of Leeds; and I remember a case of this disease in an out-patient of this hospital many years ago, in whom the tumour, which was of the size of an orange, was punctured, and found to contain dark venous blood; it was closed, but the man not being willing to remain went home, and died shortly afterwards, I think in a few hours, from hæmorrhage. It is probable that these may be connected with the thyroid gland, like the cysts of arterial blood; but I do not know from any dissection whether this is the case, or whether they may be, as Hey suggests, a kind of aneurism communicating with the jugular vein. From the early age of some cases, and their curability, I do not think the latter conjecture very probable.

Having said thus much of the diagnosis of these tumours, we will now consider the means of treatment applicable to them, which must depend on many points—the nature of the fluid, the thickness of the cyst, the circumstances of the patient, and so on.

1. You may puncture the cyst, not only to ascertain the kind of fluid it contains, and the thickness of the cyst, in order to guide you in your future proceedings, but as a palliative means of treatment. When the patient is afraid, or circumstances do not at the present time allow of a cure being attempted, the fluid may be evacuated from time to time by a small hydrocele trocar, or even by a needle, if the skin and cyst are thin, so as to allow of a ready escape. I have thus let out six or eight ounces repeatedly without seeing any bad consequences.

2. If the fluid is watery, and the covering thin, the fluid will sometimes be absorbed, and the cyst obliterated, by a stimulant application: Pott's lotion of camphorated spirit and goulard, or a solution of muriate of ammonia, or a strong solution of iodine and iodide of potassium, or an

ammoniacum plaster. I have known this succeed after puncture, when perhaps it would not otherwise have answered; but I believe the plan will not effect a cure when the cyst is thick, or much covered, nor when the fluid is thick.

3. After the fluid has been let out by the trocar, a stimulating injection, such as one containing iodine or sulphate of zinc, has been sometimes known to induce adhesive inflammation, so as to effect a cure; but it generally fails in the encysted hydrocele of the spermatic cord, which is the same disease; and I have not myself tried it in the aqueous cyst of the neck. I know no objection to a trial of this plan, if the cyst is tolerably thin, and does not extend in several divisions among the muscles, since it does not, if it fails, prevent the subsequent employment of other means, which will generally succeed.

4. These means are such as induce suppurative inflammation, and excite a continued irritation in the interior of the cyst. One method of this kind is the insertion of a slip of lint into the sac through an incision in its most prominent part, and keeping it there till the cavity appears nearly obliterated by contraction. Sometimes this will succeed very easily, as in a patient of Mr. Babington's some time ago, whom some of you may remember; but it is not always free from danger, as in the patient from whom the cyst in this preparation was removed by operation, the opening previously made having bled so as to be dangerous. The excision, however, was unfortunately followed by fatal sloughing of the cellular tissue. And if the cyst is large, or divided into compartments, when a portion, for instance, is on each side of the mastoid muscle, the simple insertion of lint will generally, I believe, be insufficient, and the continued irritation of a seton is a better method of treatment. The mode in which it may be used is to evacuate the fluid at one end of the sac by a small hydrocele trocar, through the canula of which you introduce a long probe, so as to ascertain the position of the vessels and other important parts, and determine in what direction a second opening may most advantageously be made, which is generally in the longest diameter of the sac. Some persons then cut down upon the probe, and carry the silk through the opening; but a far easier method is to employ a long fine trocar, which will pass through the canula easily, and the pointed end of which is larger than the rest of the instrument, so that two or three threads of silk in the other extremity (where there is an eye) will easily be carried through the opening made in the skin by the point. The trocar I show you will easily make the opening you require, and with it, in the case I described to you before, I made a second opening, about seven inches from the first, from one side of the neck to the other across the trachea. Where the sac is of a complicated figure, a second seton is sometimes necessary, which may be inserted at a subsequent period through one of the openings

first made, so as to pass across a portion of the membrane, which, by going under muscular fibre, may have a small communication with the rest of the sac, and thus be beyond the influence of the first seton.

The introduction of the seton will occasion in some persons a good deal of constitutional disturbance; and you must especially be on your guard against the formation and confinement of foul matter, and the irritative fever, which it excites, which you can easily obviate by a little enlargement of the most dependent of the openings, and the injection of a little tepid water to wash out the cyst, from time to time, when the secretion is unhealthy. Sometimes again, if the seton is not speedily followed by the contraction of the sac into a kind of sinus along the track of the silk, you can assist its operation by injecting a little stimulant of zinc, or iodine, or caustic solution.

The time you should continue the seton varies according to its effects, but six or seven weeks will be generally enough. Mr. Bransby Cooper has published a case in which the irritation was so great that he was obliged to remove the silk in a few days; but I have not seen this, nor do I think you need expect it in any case, if you attend to the foul purulent secretion, which requires removal in the way I have described. If, on the other hand, the irritation is too little, or the sinus is extensive under the mastoid or other muscles, you had better let the silk remain in for several months, till the cyst has evidently quite contracted.

5. In one instance, where the cyst was rather thick, and the fluid sanguineous, I touched the interior of the cyst, which reached from the trachea to the acromion, under the mastoid muscle, with nitric acid, to destroy it, and on the fourth day it seemed to have nearly succeeded, when the man was unfortunately attacked with erysipelas. I do not recommend this method, however, unless every other fails, on account of the dangers of this kind, which may arise from its use, besides the connection of the sac with the vessels, which I could feel with my finger in that case, and which, in the dissections I have made, may almost be said to form the back of the cavity; the sac being extremely thin behind, and in close contact with the vessels and nerves.

Now in our present patient's case I had intended to let out the fluid and employ a seton, believing him to have been much younger than he proves to be; but in a man of seventy-eight years of age, who really suffers scarcely any inconvenience from the tumour, I do not think I should be justified in doing what would probably occasion a good deal of irritation, and at his age cannot be considered free from actual danger. It will be very easy to do something effectual for him, if the tumour is found to increase, or gives him any trouble, and in the meantime he may use a stimulant lotion of sal ammoniac.*

* The patient, in fact, would not even allow it to be punctured with a needle.

6. There is only one more remark I will make to you, which is to caution you against attempting to remove an aqueous cyst in the neck by operation, as being both unnecessary and hazardous. Mr. Bransby Cooper in one case began an operation, believing the tumour to be a solid one, but very properly desisted from it, and cured the disease by suppuration, when it was found to be a cyst of this nature. If you desire to know the curious manner in which the vessels and nerves are connected with the cyst, so as to be concerned in an operation, you may read the description given by Dr. Warren of some cases of this kind, and that equally whether the tumour be at the lower part of the neck, or high up on the inside of the mastoid muscle below the jaw; almost every nerve and vessel of these parts requiring to be dissected, notwithstanding the tempting facility apparent before the operations were begun.

[*Medical Gazette*, vol. xxviii., p. 841, August 20, 1841.

SUPPURATING CYST IN THE NECK.

The next case I will bring before you is that of Thomas Mayall, æt. 33, who was admitted on June 2nd with a tumour on the right side of the neck, of the size of a large lemon, extending from the ear to the clavicle, covered in front by the sterno-mastoid muscle. The vessels are pushed to the front and inside. Fluctuation can be perceived, and there is some little pain at the upper part. I examined the tumour with a candle, to see whether the fluid was transparent, and I found that it was not so. I then punctured it with a grooved needle, in order to ascertain exactly the nature of the fluid. Finding that it contained serum and pus mixed, instead of either fluid singly, I allowed him to remain quiet for a few days, instead of proceeding further with it, as opening these kinds of abscesses is more likely to be followed by a bad kind of inflammation than the opening those containing more proper pus. On the 7th, however, I did open it behind the sterno-mastoid muscle, in the part where it was most accessible, and evacuated about half-a-pint of the same sero-purulent matter. The history he gives of it is, "that it commenced six months ago; and when he first perceived it, it was about the size of a walnut. Has had no pain, nor rigours at any time."

I mention this because it is not clear what was the cause or origin of the abscess. It is not common to have abscesses form in the cellular tissue of the neck, unless they are of an acute character. You may remember a little girl very recently in whom a large abscess formed in this region, in consequence of a blow. It was punctured, and she went out cured in a few days. Occasionally, also, I have seen abscesses form here without any preceding injury, but then they have been acute, and have been attended by the usual symptoms of inflammation; but here there has been an absence of all

signs of inflammation, except pain to a very trivial extent, and there was not the least thickening around, and there is no redness whatever. The reason of my examining it with a candle was that serous cysts form here, and are sometimes quite transparent. I cannot but think that the abscess in our patient was owing to suppuration in a cyst of this kind; I can find no other reason for its formation, and the fluid let out was just of that thin sero-purulent character which such cysts present us with after inflammation. When you have a simple serous cyst, opening it and indueing the suppurating process by seton, or lint, is a very good means of obliterating it, and supposing that suppuration has taken plaec in one of these hydroceles, what I have done for it may effect a cure. The notes for the 21st, are: "an opening made at the base of the tumour about an inch in length:—a piece of linen passed through as a seton; a small artery was divided." This or some kind of seton is necessary, beeause letting out the matter alone will not suffice to obliterate the cavity. The cyst under the sterno-mastoid musele cannot contraet, and the movements of the neck prevent its closing. In this situation, too, pressure cannot be applied, on aceount of the windpipe, though it is a means sometimes effectual in other situations in inducing adhesion of the surfaces of the cavity. In order to make the second opening, I passed a director into the posterior opening of the sae, and caused it to project at the inner margin of the sterno-mastoid muscle. I found the cyst very thin and shining; another reason which makes it probable that it originated in the way I have mentioned. Had it been simply a chronic abscess you would expect to find more or less hardness around the cyst; or at least some adhesion to the platysma myoides, but the thin cyst was quite insulated. Having punctured the eyst a second time, then, I passed a piece of linen from one opening to the other. Should this produce too much inflammation, so as to make it necessary for me to remove it, I shall have to take great care that the openings do not close, as they would be very difficult to keep open in the skin, though the centre will not heal on account of the contraction of the muscles. The effect of the seton is to cause the cyst to contraet, till nothing more is left than a sinus, and when it has got to that stage, the seton may be withdrawn, and the sinus gradually heals. The method of cure is troublesome, but you will generally find it successful in these serous cysts.

[There was some time afterwards a little extension of the inflammation, and the linen was changed for two threads of silk, which were finally withdrawn in the beginning of August, and the sinus then perfeetly closed.]

[*Medical Gazette*, vol. v., new series, p. 493, September 17, 1847.

ON A PECULIAR FORM OF

CONGENITAL TUMOUR OF THE NECK,

Read May 28th, 1839.

A VARIETY of tumours are met with in new-born infants, which are liable to immediate or future increase, having, for the most part, a single cyst, with various contents.

In some of these cysts there are portions of organized material, scalp, or cranial bone, or jaw bone, or nearly an entire fœtus, which can scarcely be supposed to arise from any cause other than an imperfect development and junction of two embryos in utero.

In a second class of congenital encysted tumour are some peculiar secretions,—stearine, or fatty matter, generally mixed with hair, too deeply situated to arise from the follicles in the skin,—shining particles, called by Chevreuil and Dr. Prout margaritic acid;—or pulpy matter, like rotten medlar or apple, and other materials, which, although occasionally seen also in after life, are most frequently found about the time of birth.

A third class of cysts are occasionally met with in infants, but not so frequently as at a later period of life;—serous encysted tumours in any cellular tissue; sebaceous encysted tumours in the cutaneous structure; or mucous encysted tumours, formed in the same manner as the last, but in the follicles of the mucous texture, or in the excretory ducts of glands.

I have mentioned these different kinds of encysted tumours, which may be met with in infants, in order carefully to exclude them from consideration; the object of the present paper being, not to speak of any single cyst, but of a peculiar form of congenital tumour, which is composed of many cysts joined together, in which the proportion of organized matter is so considerable, as to give a more solid character to the tumour, and make it deserve the name of cystic tumour, as much as the apparently analagous cases of cystic sarcoma, occasionally found in the breast, testis, or ovary of adults.

I have met with seven such tumours in the necks of young children, where a correct diagnosis is so important; and as the feeling and appearance of the tumour are somewhat obscure, I am led to hope that the following account may not be useless, and the two following cases may serve to show the common forms in which the tumour presents itself,—one being of large size, and the other small.

A child, about eight months old, was brought to me from Mr. Julius, of Richmond, having a large tumour on the right side of the neck, which was of the size of a small orange at its birth, and had gradually increased since

that time. The tumour now reached from the zygoma to the ericoid cartilage, and from the mastoid process to the chin; it projected outwards about three inches, so as to make the side of the face and neck appear nearly twice as large as the opposite side; and it extended also below the jaw into the mouth, so as to push the tongue considerably to the opposite side and upwards. But although it caused much unsightliness, it appeared to occasion no pain nor inconvenience, and the child was quite healthy.

The skin was unaltered and unattached to the tumour, and had much fat below it, and the outline of the tumour was smooth and uniform to the eye; on feeling it carefully, however, it was evident that there were several globular irregularities, some of which were of hard consistence, as if solid, and possibly glandular, but four others in the parotid and submaxillary glands appeared to contain fluid, which was the more probable, as two other cysts were perceptible below the tongue, transparent, like ranulæ, but containing a dark red fluid.

The cysts were punctured from time to time, as they refilled, and the same plan was pursued with several other cysts, which came forward as those first observed were obliterated; each cyst contained from a drachm to half-an-ounce of liquid, the contents of some being nearly clear water, with very little trace of mucus or albumen, but the secretion of others being of a darker colour, with more coagulable matter, so as to resemble melted currant jelly. Friction was also employed with hydriodate of potash ointment in the intervals of the punctures.

This treatment was continued for about a year, when the disposition to secrete fluid appeared to be subdued, and the swelling was about a third of its original size, and what remained felt and looked like a loose pendulous bag of fat and skin, with two or three solid lumps, like glands, below. I have lost sight of the child from that time, but on applying recently to Mr. Julius, who continued to see it, he has been kind enough to inform me that the child has been removed from Richmond for several years, but that when he last saw it, there was no tumour remaining.

The appearance of the tumour in this case was more complicated than in the next which I will mention, which Mr. Palmer attended, at the St. George's and St. James's Dispensary, and which he requested me to look at. The tumour was, in this instance, about the size of an orange, and was soft and elastic, moveable, and nearly pendulous, from its weight, and was situated in the same place as in the last case, in front of the ear and below the jaw. It gave no pain nor inconvenience, and had scarcely increased in size since the birth of the child, who was now about a year old. The skin, as in the other case, was unattached, and had much fat below it, and there had been, I believe, some thoughts of removing the disease as a common adipose tumour. There were in it, however, several round bodies, two of which

appeared to contain fluid, but the nature of the others was more doubtful. One of these, at the margin of the parotid gland, contained three drachms of clear liquid, but the other being punctured, no fluid escaped through the needle. With the final result of the case, I am not acquainted, as the child was not brought many times to the Dispensary.

The other cases were intermediate, in many respects, between these two; one of which, it appears from this account, contained altogether about a dozen cysts, large enough to be punctured, while only one or two such were present in the other tumour; in one, the cysts presented in the mouth, as well as externally (of which I have seen one other instance), while in the other, the tumour was solely on the external part of the neck; one increased steadily, the other scarcely altered from the time of birth; in one the cysts were easily distinguished, while in the other the projecting bodies felt more solid; in consequence, as dissection shows, of the cysts being very small and closely set together.

I was inclined to think, from the situation which the tumours occupied in the first two cases that fell under my notice, that the cysts might arise from obstruction of some of the ducts of the parotid and submaxillary glands; but I have seen a congenital tumour, composed of several cysts of serum, occupying the whole axilla, and projecting in the neck and below the arm, and raising the pectoral muscles in the intermediate space; and in a case of apparently the same nature, described by Mr. Arnott, in the *Medical Gazette* of March 16th, 1839, the cystic tumour was equally remote from the salivary glands, being in the posterior part of the neck, behind the sterno-mastoid muscle. The following fatal case appears to me to demonstrate the nature of the other cases, especially when considered with Mr. Arnott's, the operation for which I shall presently allude to.

A child, eleven weeks old, was sent to me at St. George's Hospital, by Dr. Willis, with a tumour in the neck; it was emaciated to the last degree, and actually smaller, according to the mother's account, than when it was born; as, in fact, it had scarcely digested any food from its birth, almost everything that was swallowed, or attempted to be swallowed, being nearly directly vomited again: it had also scarcely slept since its birth, as, whenever laid down in the horizontal position, it was instantly roused from slumber by impending suffocation; whatever rest it did obtain was therefore procured while held nearly upright in the arms. Notwithstanding this, however, it did not cry or breathe, when awake, as if there was any constant pressure about the glottis, nor was the tumour in the neck so tense as to account for the symptoms, unless some portion was intricately connected with the larynx and œsophagus, independently of the general tenseness of the whole tumour; which did not appear very probable, from the facility with which respiration was ordinarily performed. On the right side of the neck was a tumour, the

prominent part of which was of the size of a large orange, and which reached from the zygoma nearly to the clavicle, and from the ear to the chin, across the upper part. It was soft and elastic, and the skin was healthy and unattached, and it seemed to be quite free from pain or tenderness.

Below the jaw I could detect three or four small cysts of fluid, and one or two smaller, and apparently solid bodies, like glands; but the greater part of the tumour in front of the ear did not fluctuate, nor present any irregularity of surface, but was soft and elastic, and compressible, like a subcutaneous nævus, which disease it resembled, also, in becoming more tense and prominent from crying or struggling; and below the mucous membrane of the mouth were several varicose vessels, like those observed sometimes in the neighbourhood of blood-vessel tumours. The child appeared to be too far reduced for any treatment, and died a few days afterwards, suffocated suddenly after having apparently suffered a good deal of pain for a day or two; and I obtained permission to examine the body, for which purpose Mr. Hewett was kind enough to accompany me.

When the thin skin covering the tumour was turned back, it appeared to be of the size of two oranges, separated by a deep sulcus, which was formed by the tendon of the digastricus muscle, which being much pushed forwards by the tumour, must have had its actions in connection with the larynx and pharynx much interfered with. The disease was now seen to be composed of a great number of small cysts, many hundreds probably, varying in size from a pea to a walnut, closely joined together, and composed of delicate membranes, like very fine peritoneum, but in some parts covered by fibrous structure, giving the cysts the appearance of thin pericardium, and very few of them were so far insulated as to admit of being dissected out without cutting through others. The fluid in most of the cysts was transparent, with scarcely any trace of coagulable matter, but in others the contents were of every shade of red, even as dark as venous blood, but without any coagulum, and evidently only coloured secretion.

The softness and elasticity of the prominent part of the tumour arose from most of the cysts in that situation being flaccid, and only half filled; in other parts single cysts were so tense as to be quite unyielding, as if solid, and a feeling of solidity was also given by a few cysts being more closely joined together than those by their side; and in one or two parts a tense cyst projected into another in a flaccid state, so as also to feel like a solid body; although the only really solid bodies were two or three small absorbent glands, mixed with the cysts. The portion of the tumour in front of the ear was covered by a thin layer of condensed parotid gland, another part of which, in a healthy state, lay behind the cysts, through the middle of which ran the portio dura, and external carotid artery. The submaxillary gland was pushed out by other cysts, so as to be loose below the skin, and all the

vessels and nerves at the base of the jaw were surrounded by some of the cysts, and curiously twisted in their course.

On dissecting deeper, the cysts were found to extend along the front of the spine, behind the pharynx and œsophagus, some being as high as the basilar process, and some as low as the sixth cervical vertebræ; and along the whole length of the neck the cysts surrounded the carotid artery, jugular vein, and nervous vagus, which were even separated from one another by some cysts formed in their sheath. None of these bodies were very closely united to the œsophagus and pharynx, and there seemed to be nothing morbid about the glottis, except a slight thickening of the mucous membrane.

It is evident from this account, that the numerous cysts which compose the tumour are formed in the common cellular tissue; each separate cyst, it is to be presumed, being like the single serous encysted tumour met with in many parts of the body, at every age; why such numbers should be formed at once before birth, does not appear, unless it arises from the peculiarly lax and watery nature of the cellular membrane in the fœtus, especially, perhaps, in the neck, where I believe such a tumour to be more common than elsewhere.

The number of cysts existing in the tumour, and the different degrees of consistence of the whole or of separate parts in different cases, arising, as the dissection demonstrates, from the size and state of tension, and relative position of individual cysts, make the diagnosis of the tumour somewhat obscure. When numerous, and full of liquid, and small in size, they feel like enlarged glands, or other solid globular bodies; when numerous and only half filled, they become soft and compressible; but in both these cases the existence of fluid is difficult to be detected, in comparison with those cases in which only a few larger cysts exist.

The resemblance to fatty tumours is considerable, and the deception is assisted by the quantity of fat generally situated beneath the skin, and filling up the inequalities of the surface of the tumour. They are also much like a subcutaneous nævus, which is so often developed in the same situation, when the cysts are half-filled; in the fatal case I have related, the softness and compressibility of part of the tumour, its increase from exertion, and the varicose vessels within the cheek and mouth, made me think it probable that some part of the tumour was composed of blood-vessels, though the nature of the remainder was clearly perceptible. In each case that I have seen, however, the existence of globular bodies in some of which fluid was perceptible, distinguished the tumour from every other kind likely to be formed in infancy.

In the treatment of these complicated cystic tumours, the mobility and apparent insulation of portions of the tumour, whether the projecting part be taken for a single cyst or for solid matter, leads to the idea of an easy

dissection of the tumour from its connections; while the real nature of the disease shows how totally impracticable an operation of this kind would be found, in many cases, from the inaccessible situation and intricate connection of the deeper parts, with important blood-vessels and nerves passing in every direction between the cysts.

In the case of Mr. Arnott to which I have alluded, the tumour was situated in a somewhat less important situation behind the sterno-mastoid muscle. A single cyst was opened first, when the infant was a month old, and repeated once more, and when five months old, this was laid open, in order to remove what appeared to be a solid body, but which was found to be composed of a multitude of small cysts, as in the cases previously narrated. The tumour was followed under the sterno-mastoid muscle and carotid artery, and behind the pharynx, and its total excision being found impossible, a ligature was tied round the deeper part. The child ultimately did well, but the ligature was not entirely thrown off for three months, during which time repeated attacks of erysipelas occurred.

The history of this case is not, therefore, an encouragement for the performance of excision, in the more important parts about the angle of the jaw; at the same time, the occurrence of a fatal case would justify severe measures, if others fail, and shows the necessity for early attention to the tumour.

With regard to other treatment, I have only presented one completely successful case to the Society; but the progress made in the rest by similar means, when I lost sight of the children, leads me to believe that they also would have been cured. This treatment was on the same principles that are often successful in the analogous serous encysted tumours, composed of one cyst instead of many; and also in the tumours formed by obstruction of the ducts of glands, as in the mammæ or salivary glands, or in the mucous follicles, as in the vagina or mouth.

1. The cysts may be emptied, from time to time, by a grooved needle, so that there is no scar whatever; or by a lancet, when they are situated in the mouth; the punctures heal directly, and the emptying the larger cysts appears to assist the action of other remedies upon the cysts themselves.

2. Pressure may be employed, especially after the evacuation of the fluid, in some situations, as in front of the ear, although, of course, this means is generally inapplicable, on account of its obvious interference with respiration, mastication, and deglutition.

3. Stimulant applications may be constantly employed, of such a strength as to excite moderate inflammation, but stopping short of suppuration, in order to avoid deformity; for which reason, also, I directed their intermission for a short time after the punctures. The cysts do not appear, however, much disposed to inflammation, beyond the degree necessary for their oblite-

ration and absorption, after the fluid has been got rid of. The applications I have made use of have been the ointment of hydriodate of potassa, rubbed on by the hand; a solution of a drachm of iodine and two scruples of hydriodate of potassa in an ounce of water, painted over the tumour by means of a camel's hair brush; a lotion, of half an ounce of Goulard with two ounces of spirit, and six of camphor mixture, applied by means of folded linen; or one composed of from one to two drachms of muriate of ammonia, mixed with two ounces of vinegar and spirits of wine, with eight or ten of water. I presume, however, that anything else would answer the same purpose, which did not excoriate or blister the skin, or excite suppuration in the cysts; and judging from the few cases I have seen, their effect would appear to extend to some depth below the skin, and to act on both the cysts and their fluid contents. [Small setons may also be employed with success in some of the larger cysts.]

If a cure is effected by such means, before having recourse to the severer methods of laying open the cysts, or attempting their removal, it must obviously be tedious, as some cysts fill again more than once, and others come forward; hence, chiefly, the reason why several cases were only half cured, when I saw them last, the patience of the children's friends becoming exhausted before the cases could positively be said to have been cured. The note I have quoted from Mr. Julius shows, however, that one large and extensive and deeply situated tumour, containing numerous cysts, could be completely got rid of by such means, and each of the others was very materially lessened, and would probably, I think, have been also cured by perseverance, if, indeed, the discontinuance of attendance did not arise from the absorption of the tumour going on, beyond what I myself saw.

[*Med. Chir. Trans.*, vol. xxii., p. 231.

DISSECTION OF A FATAL CASE OF

CONGENITAL CYSTIC TUMOUR OF THE NECK.

The subject of this tumour was an infant, brought to me when a month old, in October, 1850, about a week before its death, by its father, a medical man, from whom I received the following account.

"The child was born September 21st, 1850, and for some minutes did not breathe satisfactorily; there was nothing whatever in the labour which indicated pressure, or which could render the infant's respiration difficult. It soon recovered, and we observed nothing peculiar except unusual stillness and absence from crying until the evening of the following day, about 18 hours after birth. The child then appeared to have snuffling, and I thought

that perhaps something was wrong in the palate or nares. In the course of the night, the breathing became so difficult that I had it baptized in the hourly expectation of its decease, and it was then that we first noticed the swelling externally. It presented one uniform smooth enlargement of the entire right side of the neck and face, just like the swelling of erysipelas; and it is probable that inflammation of the skin and cellular tissue over and about the tumour might have been present, because in a couple of days the uniform swelling subsided, leaving only the irregular surface, just as you saw it, and which did not materially alter in size or appearance until death.

"As regards the symptoms, I have used the word difficult as applied to the breathing, but the difficulty never appeared to me at the glottis. I never felt satisfied that the air was prevented from entering the chest; the lips never became blue, and no signs of venous congestion presented themselves. It was in the pharynx that the tumour projected, and it was on the nerves of respiration that the tumour appeared to me to press. You might see how extremely thoracic was the breathing, so that at one time we thought the chest deformed. And the breathing was not at all like that of obstructed respiration, but much more such as I should imagine to be produced from section of the diaphragmatic nerve on one side. The child would make a succession of small expirations, and after an interval of 15 to 60 seconds by the watch, would fetch a deep inspiration as if the diaphragm at last were stimulated to act. No sign of venous congestion appeared, but the heart seemed to get by degrees feebler, and ultimately ceased to beat. As long as the child took plenty of breast milk it thrived, but when the appetite fell off, it pined. In the first three weeks it lost 1¼ lb. in weight, and during the last ten days, its weight passed from 7 lbs. to 5 lbs., becoming at its decease just like a little doll in the arms."

A careful examination made by Mr. Athol Johnson disclosed the following condition of the tumour:—The sterno-mastoid and other muscles at the upper part of the right side of the neck were pushed outwards by a tumour situated beneath them. On dissecting these off, and exposing the vessels, &c., the common carotid artery, the internal jugular vein, and the pneumo-gastric nerve of the right side were found to be separated from each other, and considerably protruded outwards. The internal jugular vein was situated to the outside of the tumour except near its origin at the base of the skull. The upper part of the common carotid artery entered the structure of the tumour, which was firmly adherent to its walls. Whilst in the tumour the common carotid artery divided into its external and internal branches, and the first parts of the following branches of the external carotid, viz., the pharyngea ascendens, superior thyroid, lingual, and facial, were also embedded in the tumour. The right pneumo-gastric nerve, about

the middle of the neck was pushed outwards on a level with the artery and the vein ; higher up it was situated in the interior of the swelling to which it was firmly adherent, presenting a good deal the appearance of the superior cervical ganglion. The inferior laryngeal nerve was unaffected throughout its course ; the superior was given off from the pneumo-gastric, whilst in the tumour. The ninth nerve (*motor linguæ*), was imbedded in the tumour at its upper part, and appeared much stretched as it crossed the neck, where it was situated on the outer side of the swelling.

The tumour itself was dark coloured and lobulated on its surface ; it was placed on the pre-vertebral muscles, and extended downwards as low as the thyroid body, from which it could be easily separated. Posteriorly it rested against the mastoid process underneath the sterno-mastoid muscle. Superiorly it extended upwards under cover of the lower jaw in the pterygoid region as far as the base of the skull. In this situation it was somewhat adherent to the parotid gland, from which however it could readily be distinguished. In front, it pressed against the thyroid cartilage, the right ala of which was a little bent inwards as if by the pressure ; and then it extended in front of the spine behind the pharynx (to the superior constrictor muscles of which it was a little adherent), as far as the left side of the neck in the palatine region. The interior of the larynx appeared healthy ; there was no œdema of the glottis.

The structure of the tumour appeared to the naked eye to consist of a great number of cysts, most of them of small size, mixed up with solid matter of a yellowish white colour like recently organized lymph deposited between the cysts, and had every appearance of being not malignant.

Under the microscope, it was found that the tumour was composed of a large quantity of very fine and dark granular matter, in which were seen numerous small dark and refractive oil globules. Embedded in this blastema were numerous granular vesicles, some of which were oval, some oblong, and a few of a circular form. The outer margins of these vesicles were very distinct, containing in their interior numerous small dark granules. Both these elements were embedded in the meshes formed by numerous delicate fibrillæ of white fibrous tissue.

The dissection of this case, and of the preceding case (page 281), is sufficient to warn the surgeon against attempting the removal of these tumours by operation without most careful examination of the anatomical relations presented in each case.

CASES OF

CARCINOMA OF THE THYROID GLAND.

Read November 28th, 1843.

Carcinomatous diseases of the thyroid gland are evidently not common from the tenor of the remarks met with in different modern writers. "Malignant diseases," says Mr. King,* "sometimes encroach upon and *very rarely* develope themselves in this body." It is remarked by Dr. Walshe, in his excellent account of cancer in the "Cyclopædia of Surgery," "unless as a complication of pre-existing encysted disease, or other form of bronchocele, cancer of the thyroid gland is *singularly rare*." Scarpa entertained the idea that malignant disease of this organ only took place as the consequence of preceding alteration of the parotid gland or other adjacent part.

I am inclined to believe that the thyroid gland may be more often the seat of primary scirrhus than is usually supposed; and that I have seen several cases which were in all probability examples of this disease. The following case for instance was, I think, a scirrhous tumour of this body.

Benjamin Young, æt. 61, was admitted into St. George's Hospital under my care, June 28th, 1837, and the note-book observes, that "he had a very large bronchocele, occupying the whole of the anterior part of the neck, extending laterally about an inch and a half beyond each mastoid muscle, and vertically from the os hyoides to the sternum. He first perceived it about six years ago, and his health has generally been good. He has a trifling cough, but the tumour considerably affects his breathing. The tumour is particularly hard and fixed in situation, and is not tender." The effects of the tumour varied from time to time as in all bronchoceles; and a few days after admission he complained much of weight and pain in the chest, with difficulty in breathing and lying down, and occasionally of noise and throbbing in the neck; which symptoms were on this and subsequent occasions relieved by a blister to the chest. These chest symptoms, however, were probably in part owing to valvular obstruction of the aorta, aggravated by irregularity of increase in the tumour. He took iodide of potassium internally without advantage; and the local employment of mercurial ointment and iodide of potassium was tried, but made the tumour more painful. He continued in the hospital till the end of August, at which time the tumour was larger and harder, and he could scarcely lie down at any time from its pressure on the larynx; his countenance had become very anxious, and he suffered a good deal from pain in the tumour, extending upwards to the temples: and the general irritation was shown by an

* "Guy's Hospital Reports," vol. i. 432.

increase of pulse from 65 to 100. Of his subsequent history I am ignorant, as he left the hospital to go into the country.

In this case, and in others which I believe to have been of the same nature, the age of the patient has been from forty-five to sixty-five when the disease appeared; at which period of life ordinary bronchocele very seldom takes place, and the tumours most likely to present themselves are the serous tumours developed in or near the thyroid gland, or the cartilaginous and osseous degenerations sometimes observed in elderly persons, and lately described by the term enchondroma. From the former the distinction is sufficiently obvious, as the existence of fluid is easily ascertained by the finger or the grooved needle. From the latter, the tumour may be more difficult to distinguish, as the hardness is nearly equal in the two cases, but the scirrhous tumour seems to me to be more uniform in its texture, while the other is considerably harder at one part than another, and the surface is smoother and more regular in the scirrhous tumour than in the cartilaginous and bony tissue of the other disease. The scirrhous tumour has appeared also to be more completely fixed to the larynx, and to the muscles around it, than in any other tumour of this gland, especially in the latter stages, when the cellular tissue is probably beginning to be converted into the same disease. All tumours of the gland necessarily move with the larynx in speaking and swallowing, but in the scirrhous tumour the motion of the larynx is itself interfered with, and therefore it not only rises less freely, but the respiration and deglutition of the patient are more affected than with most other tumours, even when of much larger size. From this cause perhaps in part, and in part from the essential nature of the disease, the patient has an expression of greater suffering and distress in his countenance, than with tumours of other kinds, and although usually of good health when the tumour first appears, he acquires, in the latter stage of the complaint, the usual sallow complexion of one labouring under malignant disease.

But it will naturally be said that these remarks must be only conjectural, unless the final termination of the tumour was known. In the following case, the appearance and symptoms of the disease, on the patient first coming under my care, were as nearly as possible the same as in the case already narrated, and in four others, in which I felt equally convinced of the nature of the tumour; but I was fortunate enough, from the peculiar manner in which the disease spread, to have an earlier opportunity than I otherwise might have had, of verifying the diagnosis which I had formed of the tumour on his first admission, while the patient still had the appearance of perfect health. I have thought therefore that the following history might be deserving of the attention of the Society.

Thomas Holder, æt. 50, was admitted into St. George's Hospital, May 17th, 1843, having the appearance of perfect health, with a considerable

enlargement of the whole thyroid gland, but particularly of the right lobe, which projected upwards more than the left; the tumour was uniformly smooth on the surface, and very firm and solid; it was completely fixed to the larynx, and sufficiently free from attachment to other parts to move with all the motions of the larynx and œsophagus; the skin was unattached and unaltered in colour, and the superficial veins were large. He breathed with some noise, and had a slight cough, but could respire naturally when told to do so. Deglutition was performed with somewhat more difficulty than respiration, although the larynx and trachea were thrown very much to the left side of the neck, nearly two inches perhaps out of the central line. The tumour was free from pain and tenderness. The patient was deaf and dumb, so that a full history could not be obtained at first; but it was learned that the first appearance of the tumour was only about five weeks before his admission.

The nature of the tumour appeared to me evidently to be carcinomatous, and probably scirrhous, and that it did not admit of surgical relief by operation, in consequence of its intimate connection with the larynx. I determined however to admit him, and observe the effect of iodide of potassium, which was employed both internally and locally; but it was not continued for more than a month, and was intermitted twice in that time, on account of attacks of slight fever, with great pain in the head, which were supposed at first to be owing to the medicine, but were doubtless attributable to the impeded circulation through the brain, as the same attacks occurred after it was discontinued.

The patient at first thought himself better, and the tumour smaller, but the difference was very trifling, and at the end of a month its size had evidently increased. On the 13th of July it was perhaps half as large again as on his admission, and some pain was complained of in the upper part of the tumour. He was observed also to be getting thinner about the middle of June, and had become considerably emaciated before his death, which happened on the 23rd of July.

The difficulty of swallowing was considerable the whole time, but occasionally increased spasmodically, and was then relieved by a small blister to the outside of the larynx; but for the last two or three weeks the dysphagia was constant, and prevented any solid food from being taken, and even liquids were swallowed with difficulty, so that he frequently was obliged to leave the table from threatened suffocation in the act of eating, and from vomiting, which sometimes occurred regularly at a certain period after eating, and at other times took place violently during his meal.

Besides the vomiting, he suffered much from pain in the epigastrium and hypochondria, and had tenderness over the stomach, while the respiration seemed little interfered with, so that he could inspire quite deeply without

cough or pain, and the sounds were natural on percussion, or when examined by the stethoscope.

About the middle of July, the pain being then much increased, he began to vomit some coagula of blood, but this again lessened while he was taking some lead and opium. For a few hours before his death he had much difficulty of breathing, and became of a livid colour, from this cause.

The following account of the post-mortem examination is taken from my clinical book.

Upon the anterior surface of the windpipe was a large tumour, which extended from the thyroid cartilage to the sternum. Laterally it projected beyond the sterno-mastoid muscles, the fibres of which, as well as those of the sterno-hyoid, omo-hyoid, and sterno-thyroid muscles of both sides, were expanded over, and partly embedded in the tumour. The right internal jugular vein, common carotid artery, and pneumogastric nerve, were separated from each other by the pressure of the morbid growth. The vein was closely adherent to the tumour, and its coats, in one place, had been absorbed, and a soft part of the tumour projected into its interior, and a large clot of blood was firmly attached at this part. The artery was deeply embedded in the tumour, and the pneumogastric nerve much flattened, and its fibrils separated so as to present a plexiform appearance.

The thyroid gland had nearly disappeared, the only part which was left being a small portion of the left lobe intimately joined to the tumour, so as to show that they were originally portions of the same body, and this portion that remained was perfectly natural, and there was a complete line of demarcation between the two structures. The anterior surface of the windpipe was healthy.

Posteriorly the morbid growth had extended to the pharynx and œsophagus, and to the cellular tissue connecting them with the larynx and trachea. The posterior part of the œsophagus was healthy, but the anterior part presented a large, irregular, ulcerated mass, extending from the arytæno-epiglottic ligaments to the first three or four rings of the trachea, and projecting into the interior of the pharynx and œsophagus, its surface being of a dark green colour, and covered with shreds and portions of sloughs, which were very fœtid. The larynx and trachea had been quite pushed over to the left side, forming a curved line, and the right arytæno-epiglottic ligament was much thickened and altered in texture, and immediately below the cricoid cartilage a large ulcerated opening led into the trachea.

Externally, the tumour presented an irregular lobulated appearance, the greater part being situated on the right side; internally, it presented the structure of genuine scirrhus; it was remarkably firm, in some places of a light yellow colour, and in others of a pale red tinge; the variety of scirrhus

which it most resembled being the solanoid form; in fact, the section was very like that of a red potato.

There were many small encephaloid tubercles at the base of both lungs, and in the cellular tissue under the costal pleura.

The brain was wet, and the bloody puncta large, and the veins and sinuses were gorged with dark-coloured blood.

The stomach was perfectly healthy, and rather small; the liver healthy, with a small serous cyst on the surface of the right lobe; the other viscera were healthy.

The symptoms enumerated, as caused by this tumour, included tenderness and pain in the epigastrium, vomiting after meals, and latterly hæmatemesis, which naturally led my attention to the stomach. During the first few weeks, careful examination detecting no hardness or swelling, and the symptoms not being constantly present, I did not think there was cancer of that organ; but during the last few days, the repeated vomiting of blood, and the great pain and tenderness of the epigastrium, and in that region only, made me express an opinion that there was most probably cancer of the stomach. The difficulty of swallowing, and the vomiting of blood were, however, satisfactorily accounted for by the ulceration and sloughing of the œsophagus and pharynx; but whence arose the marked pain and tenderness exactly over the stomach; which were more complained of by the patient than any other symptom, and existed even at the times when there was a temporary cessation of nausea?

Looking to the highly expanded state of the fibres of the right pneumogastric nerve, is it not very probable that the symptoms in question depended upon this circumstance, the pain being referred (as with pressure on the spinal nerves) to the part where the nerves are finally distributed below the seat of pressure and irritation, which would in this case be chiefly the pyloric end of the stomach?

I think I never saw the larynx so much turned out of its natural course by any tumour, as in this case, and dissection showed us also a cancerous degeneration of the side of the rima glottidis, and an ulcerated opening into the trachea; but yet the difficulty of respiration was never urgent till just before his death, and cough was very little complained of throughout the whole illness. He could always expand the chest freely, and without pain, and the stethoscopic signs showed only bronchitic effusion at the times that the obstruction about the glottis was more marked than usual. In fact, where there has been no pleuritic effusion, and no scirrhous alteration of the pleura, the little distress occasioned by encephaloid tubercles scattered through the parenchyma of the lungs is often very remarkable.

In this case the scirrhous degeneration occupied the whole of the thyroid gland, except one small portion of the end of the left lobe, which seemed

perfectly healthy. In a case published by Velpeau, and consisting probably of encephaloid rather than of scirrhous texture, "The thyroid gland contained," it is said, "about a dozen cancers," all of which were easily separated from the substance of the gland, which was itself perfectly healthy. It is said by Dr. Walshe, who quotes this case, that cancer of the thyroid gland is generally of the scirrhous kind. It is remarkable, however, that in a modern work, which contains more drawings of the various diseases of the thyroid gland than any other work ("Atlas der Pathologischen Anatomie," by Dr. F. Albers, of Bonn), while there are several examples of medullary or hæmatoid disease, there is not one, the texture of which looks like scirrhus. There is one called "Carcinoma Glandulæ Thyroidiæ;" it appears however not to be malignant at all, but to consist of the cellular variety of bronchocele, at any rate if malignant, it was not scirrhus. Of the instances of "Fungus Hæmatodes Glandulæ Thyroidiæ," described by this author, one resembles the case I have related, in this respect, that it had increased on each side of the windpipe, so as to adhere apparently to the œsophagus, but the interior of the tube remained quite healthy, and there is a large sloughy mass in the front of the tumour, instead of the sloughing of the posterior part of the tumour into the œsophagus and pharynx, shown in my own case.

The only case which I have myself seen examined, of fungous or medullary disease of the thyroid gland, was one in which one lobe of this body was diseased, and I place the preparation on the table of the Society to mark the contrast between this variety, and the scirrhous kind of tumour before described. In this case, the patient, a woman, 55 years of age, was admitted into St. George's Hospital, under the late Mr. Rose, on the 9th of November, 1827, for a tumour of the thyroid gland, but there was also a tumour on the head, which had been punctured by a surgeon three weeks before her admission, and from which glairy serum, mixed with blood, escaped on the introduction of the probe. To this she paid little attention, and said, when questioned about it, "Oh, Sir, that is only a little tumour." It was the cause of her death, however, about sixty hours after her admission, being fungus hæmatodes of the parietal bone. The preparations of both parts are preserved in our Museum, and the texture of the tumour of the bone was nearly the same as that of the thyroid gland, soft, elastic, dark-coloured, and with a mixture of cells of serum, or bloody fluid, and no part of it is possessed of the dense, firm, and white texture of the scirrhous tissue seen in the other case.

Whichever variety of carcinomatous disease may be the most frequent, it does not appear, from examination of pathological collections, that either of them is common; and wherever preserved, the preparations of the two varieties appear to show the same marked contrast, as in the specimens laid before the Society. There are, for example, two preparations of malignant

disease in the Museum of the College of Surgeons, one of which came from Mr. Howship's collection, and shows a medullary tumour of large size entirely surrounding the larynx, soft, spongy, and full of medullary substance. The other is an apparently scirrhous tumour of firmer structure, closely adherent to the larynx and trachea, for several inches, and ulcerating into the tube, which is, in part, converted into scirrhous texture.

[*Med. Chir. Trans.*, vol. xxvii., p. 25.

TWO CASES OF CONCUSSION,

ATTENDED WITH PECULIAR SYMPTOMS: WITH

CLINICAL REMARKS ON BLOOD-LETTING IN INJURIES OF THE HEAD.

Case I.—William Edwards, æt. 35, admitted July 25, under the care of Mr. Hawkins.

The evening before his admission, he fell from behind a carriage, and struck the back of his head violently against the ground, by which he was stunned for a considerable time.

Directly after the accident, he was bled from the arm, and in the course of the evening from the temporal artery, so that by his account he lost altogether a considerable quantity of blood. On his admission, he seemed to be still labouring under the effects of concussion, sleeping a good deal, and complaining much of pain in the head.

Ordered to use cold lotion to the head, and to take saline mixture, with 20 drops of Antimonial wine, and half a drachm of Epsom salts every six hours. Fever diet.

26th.—Less sleepiness, but great pain over the whole head, with much intolerance of light, the pain being aggravated by it, so that he lies with his eyes constantly shut, though totally unable to obtain any sleep. Both pupils act, but sluggishly, especially the left. Tongue foul; bowels open; pulse slow and weak, 60.

27th.—Pain rather less; tongue more loaded with a white crust, brownish in the centre; bowels open; pulse 64, slightly intermittent.

Antimonial powder and Calomel, of each 5 grains, at bed-time. Half pint of beef-tea.

28th.—Antim. powder, Calomel, of each 3 grains at bed-time. A pint of beef-tea.

29th.—Pain in the head and eyes equally violent; pulse 64, small and weak, though not intermittent; tongue thickly coated with creamy fur, less brown in the centre; bowels moderately open each day.

Twelve leeches to the forehead, continuing the cold lotion. Increased diet, with a pint and a half of beef-tea.

30th.—Pain directly relieved by the leeches, though not quite removed; less intolerance of light; slept better; pulse considerably *fuller*, but soft, 64.

31st.—Ordered to have the ordinary diet of meat, &c.

3rd August.—Gradually improving, though not quite free from pain; countenance cheerful; pulse 70, *fuller;* tongue gradually cleaning; pupils act naturally and readily.

14th.—No complaint.

Case II.—James Neill, æt. 28, admitted July 28th, under the care of Mr. Hawkins.

He fell from a gig upon his head and shoulder, by which he was stunned for an hour, and fractured his left clavicle; and he had some bleeding from the nose and throat, and from the left ear. He was bled largely from the arm before his admission, and was intoxicated. He was admitted in the evening, and during the whole night was violently delirious, and constantly moving about, wholly regardless of his fractured clavicle, from which he has removed all the bandages.

30th.—He has recovered his senses in great measure, but cannot be kept quiet; he complains much of violent pain in the head; pupils contract, though slowly, but the light hurts his eyes very much; bowels open; pulse small, but not increased in frequency.

Saline mixture. Fever diet.

31st.—The pulse having slightly risen, he was *bled* last night from the arm, but directly became faint, so that *only four ounces* were taken, and the blood was found to be neither inflamed nor firm; bowels not open.

Calomel, Antimon. powder, of each 5 grains, at bed-time. Senna draught in the morning.

2nd August.—Complains much of the pain in the head and intolerance of light; pupils contract; bowels not much opened by his medicine; pulse quick, but weak; tongue coated with creamy fur. He is still very restless, but has less tendency to delirium, from which he has not been hitherto quite free. Head rather hot and flushed, and the eyes slightly suffused.

Calomel 2 grains, Opium 1 grain, this evening and in the morning. Ten leeches to the forehead, with spirit lotion. Beef-tea, a pint.

3rd.—Pain not relieved; pulse 120, weak and irritable.

Beef-tea, a pint and a half. Calomel, Antim. powder, of each 4 grains, at bed-time.

4th.—No amendment; very restless; tongue more thickly coated with the same white fur; pulse 120.

Twelve leeches to be repeated.

5th.—In the same state.

Beef-tea, two pints. Calomel 3 grains, Ext. of Hyoscyamus 5 grains, each night and morning.

7th.—Considerably improved; much less pain in the head; pulse fallen to 76, fuller; tongue cleaner; bowels open; mouth and lips affected by the calomel.

To omit the pills. Ordinary diet.

℞ Mist. Camphoræ ℥iss. Potass. Tart. 3j. Confect. Aromat. ℈i. Carbon. Ammon. gr. iv. M. 6tis horis sumend.

From this time he continued to mend, but left the house contrary to advice, in order to return to his duty of writing as a clerk, a few days afterwards.

We have continued the notes of the cases to their conclusion, but we should observe that the clinical lecture of Mr. Hawkins, which we subjoin, was given on the 2nd of August, while the symptoms in Neill's case were at the worst.

Here are two cases presented to your notice, not of very common occurrence, although, as is often the case, they happen, fortunately for us, to have been admitted at the same time. They are precisely similar in their most prominent features, and suggest many useful reflections upon *Blood-letting* after Injuries of the Head, and they will enable me to show you that blood-letting, when carried to too great an extent, is equally injurious with abstaining from bleeding altogether.

Both these patients, after an injury of the head, have complained of intolerable pain in the head, which produced an expression of great anxiety, and has been so severe that it has kept them awake for several successive nights, and has occasioned so much restlessness in one of them, that it has been impossible to keep his broken clavicle moderately quiet. Each of them has had excessive intolerance of light and the pupils have contracted very feebly and sluggishly, and irregularly, and the attempt to move or sit up is attended with great giddiness and increase of pain. Now such symptoms as these may attend inflammation of the brain, or such intense pain as they experienced may arise from pressure produced by effusion of blood on the surface of the brain. Mr. Brodie met with a case, in which this pain was instantly removed by elevating a portion of depressed bone. What is it, then, which induced me to increase the diet of these patients, while I ordered leeches to the temples,—to blow hot and cold, as it were, at once, though, in reality, the two plans of treatment are perfectly compatible with each other? It is briefly because I believed they suffered, not from either of these causes, but rather from too great or uncalled-for blood-letting in the first instance, which has subsequently obscured the symptoms, and may easily give occasion to the mistake of such patients

being still further lowered by depletion, the effects of which it may be long before they recover from. Neill, indeed, has been bleeding from the ear and nose, which sometimes indicates fracture of the base of the skull; but in his case, from the bleeding being arterial—from his having fallen upon his shoulder—and other circumstances which I shall not enumerate, I am induced to think it only leads to the suspicion of the concussion having been rather severe at first.

It is, you are aware, a very common practice to take blood away from a person directly after he has received a severe blow upon the head. The public expect it to be done, because the practice is so generally adopted; and, accordingly, each of these men was bled copiously, in compliance with this expectation, or because their surgeons had not considered whether it was really necessary or not. But let us examine shortly for what reasons we should really have recourse to depletion at any time after such injuries as these.

1. The first and direct effect of concussion of the brain is upon the function of circulation, producing syncope, or a state of collapse more or less tending to syncope. The circulation is, in fact, so far under the influence of the nervous system, that any sudden or violent injury of the brain or spinal marrow, or any severe injury which does not directly implicate these organs, but which only induces a shock upon the nervous system, may be directly or very rapidly fatal. Is bleeding, then, a mode of practice which can be expected to recover a person from this state, when the heart's action is almost stopped, and the pulse vacillating, and scarcely to be distinguished? Clearly not. [Mr. Hawkins then related the case of a boy who was knocked down by a carriage, and stunned, and directly bled; who was in a state of complete collapse when admitted into the hospital, from which he never recovered, but died a few hours afterwards.] Wait, then, till this condition is recovered from—till the heart acts with greater force, and the pulse is again felt at the wrist. Reaction takes place at various periods after the concussion; and the force of the reaction is generally proportionate to the previous depression, so that depletion to a moderate extent then becomes highly necessary, to guard the injured brain from the effects of excited circulation. If you bleed before this period, you may prevent reaction taking place at all, and the consequences may be fatal, as in the instance I have related. Even when reaction does take place, the collapse may recur, so that you must watch the state of the pulse, and the effect it produces; you must restrain the circulation within moderate bounds, but not depress it too much by too early depletion, or by carrying it beyond just limits. You observed the immediate effect produced by a very small bleeding, when slight reaction took place in Neill. The depletion was therefore very properly discontinued, or it might have been very injurious.

But perhaps you may ask whether, since fatal syncope may be the effect

of severe concussion, you ought not to exhibit stimulants to obviate this danger, and induce reaction at an earlier period. And no doubt in some rare cases stimulants are necessary; but it is in very few cases indeed that you are required to exhibit them. If you give them unnecessarily, the obvious consequence will be, a proportionate degree of reaction, requiring active depletion, to prevent in fact the effects of your own treatment, rather than those of the injury. In by far the majority of cases nothing at all is necessary during the first stage of concussion, but the quietly placing your patient in the recumbent posture. If, however, you should find that, instead of his gradually recovering from the state approaching to syncope, the pulse should in some unusual case become more and more feeble and intermitting, and the extremities more cold, administer cautiously some ammonia, or æther, or other diffusible stimulant, which may rouse the heart's action without producing permanent excitement.

2. Let us suppose, then, that the first stage of collapse has passed, and that the circulation is restored nearly to its natural standard, or perhaps a little above this; what are now the motives for having recourse to blood-letting in the manner that I recommend? The reasons for depletion are of two kinds: the first, to obviate immediate danger, and the second, to ward off remote consequences. First, the immediate danger is the occurrence of hæmorrhage. The smaller vessels of the surface of the brain are often ruptured, and the substance of the brain slightly torn, by severe concussion, so that numerous bloody points are found towards the surface of the convolutions; and if the patient dies two or three days afterwards, you will find these points softened and pulpy. [Mr. H. here showed a preparation in which this condition of the brain is seen.]

When reaction, therefore, has taken place, bleeding becomes highly necessary, to prevent effusion of blood over all this surface; indeed, it is no uncommon occurrence for some larger blood-vessel to be ruptured, so that the patient recovers his senses when the circulation begins to return, but quickly loses them again, and falls into a state of complete and fatal compression. It is plain that if any measures can prevent this internal hæmorrhage, it must be bleeding; and you will observe another reason for great caution in the employment of stimulants in the first stage of concussion. Moderate collapse is exactly the state you would wish to exist; and your bleeding, when reaction takes place, in all severe injuries of the head, is designed purposely to continue the state of depression of the powers of the circulation, till coagulation has taken place to defend the weakened or ruptured vessels against further hæmorrhage, if you have any reason to apprehend this danger.

The second, or remote consequence of concussion, against which you have to guard, and to prevent, if possible, is inflammation of the brain, with

which view blood-letting is no doubt highly proper; which may be repeated once or twice, if the pulse is full and quick, in the next few days. But here also, gentlemen, take care that you do not bleed too often or too copiously, lest you run into other dangers of not less magnitude. Perhaps your patient has the laceration of the substance of the brain which I have just alluded to; —bleed him largely, as I have often seen done, till the face is pallid and the whole capillary system nearly empty, and your patient may die, because the capillaries of the brain cannot throw out lymph, or otherwise repair the mischief which has been effected. Such an injury can no more be recovered from without *some* activity of circulation, than a patient in a similar condition could obtain union of a fractured bone. Or perhaps your patient may be an habitual drunkard—or he may be actually intoxicated at the time of the injury, as one of these men was. You know how frequently severe or even fatal delirium traumaticum takes place, when such persons are merely deprived of their accustomed stimulant potations, and how cautious you find us sometimes in keeping them on the low diet of the hospital, even when severe local inflammation is going on; *à fortiori*, therefore, will they be liable to it if active depletion is at the same time employed, and the injury is one of the brain itself. In fact, you must almost always abstain from bleeding any person while in a state of intoxication, as this man was when he was bled, previous to his admission. But further, are you certain to prevent inflammation of the brain even by active depletion?—and if it does occur, what further resource have you left, when the patient is already lowered as much as he will bear? Recollect, that it is not the strong and vigorous who are most liable to inflammation, though it is often most severe in them, if it does occur; but it is the naturally weak, or those who are debilitated and disturbed in health from any cause, who are most easily acted on by any of the causes of inflammatory action.

Or, in the last place, if you have recourse to active depletion, you may so disturb and derange the circulation within the brain, that a state of general debility, with local congestion, may be the consequence; as I believe to be the case in the two cases under our consideration.

The general line of practice, therefore, in concussion, should be to bleed your patient pretty largely when reaction is established; largely, that is to say, according to the system of each individual; and if the pulse remains excited, or rises at some subsequent time, to repeat the bleeding in smaller quantities, paying at the same time great attention to the diet of the patient, and keeping him quiet and cool, and free from excitement; employing at the same time active purgatives and tolerably large doses of tartrate of antimony. But even with these you must be careful to employ the same caution and judgment which I am endeavouring to inculcate with regard to actual blood-letting. You may be assured that too great starvation, or too

active purging, as well as undue loss of blood, are all contrary to the principles which should regulate your treatment of these interesting and often obscure cases of injury of the head.

Probably much error has arisen, both in medical and surgical practice, from the peculiar nature of the circulation in the brain not being properly understood. We use the terms fulness of blood in the head, and emptying the vessels of the brain, without recollecting that neither of the expressions are correct, as they may be in other parts of the body. The other organs of the body are subject to the influence of the air, and may contain much less blood at one time than at another; but atmospheric pressure cannot be exerted through the cranium, and consequently, granting the incompressibility of the cerebral matter, the actual *quantity* of blood within the cranium must always be the same. The circulation may, however, be altered and disturbed in various other ways, and thus the functions of the brain may suffer. 1st. If a person is bled largely, or depletion is employed in any other way, the quantity of blood in the whole body being materially lessened, the *relative proportion* of blood in the brain to that elsewhere is altered in a corresponding degree; the brain containing just as much as usual, the diminution must be suffered in the rest of the body.

2ndly. The quantity of blood in the brain being the same, the *relative situation* of the blood may be altered. If blood is extravasated, producing what is termed compression of the brain, blood to the same amount is prevented from entering the cranium; or the vessels of one hemisphere, or of the surface of the brain, being unusually full, the vessels of the other hemisphere, or of the interior of the brain, in each case respectively, will be proportionately contracted and empty.

Or, 3rdly, the *rapidity* of the circulation may be very different, under different circumstances; so that although the brain contains the same quantity as usual, and that quantity is equally distributed through its substance, yet a much larger quantity may circulate through the brain within a given time, under some conditions of the heart's action, than in others; and the functions of the brain may consequently be excited at one time, or depressed at another, in correspondence with the rapidity or tardiness of the circulation.

Or, lastly, the *balance* of the circulation in *the arteries and veins* may be much disturbed, so that although the quantity of blood actually within the cranium be always the same, yet the veins may be full at one time and the arteries at another; there may be venous congestion or arterial action—the blood being, in the former case, principally found on the surface of the brain and in the sinuses, and in the other being in the interior and at the basis of the brain.

In all these various ways the circulation may be altered and deranged;

and thus it is that the functions of the brain are excited or depressed, or irritated and disturbed, so that the most opposite states of the system may give rise to the same symptoms. Thus it is, to return to the subject of our present cases, that the debility arising from unnecessary depletion may produce the same symptoms which in another case may arise from excitement of the circulation.

But, you will ask, are there no means of distinguishing in any case from what cause the disturbance of the functions of the brain arise, so as, on one hand, to avoid the error of bleeding, when we ought to feed our patients generously; or, on the other, of giving them porter or wine, when we ought to take away blood? Observe the distinctions in the present cases. Are the acute pain and intolerance of light to be regarded as symptoms of inflammation? This opinion is contradicted by these circumstances. The pains commenced from the first, soon after they had been bled; and, consequently, before inflammation was likely to occur. The pulse in each of them is small, soft, compressible; in Edwards it has been very slow for several days, not above 60; and although it has been quickened in Neill, yet its softness shows it was not an inflammatory pulse. The same treatment quickened the pulse of one, and lowered its frequency in the other. The intolerance of light has not been attended with a contracted and easily excited pupil, but although the candle induces action, yet that action is slow and variable. The countenance has been for the most part pale, and the skin cool; and in Edwards, at least, there has been no redness of the conjunctiva. Neill, it is true, had some flushing of the face, and redness of the eyes, with increased quickness of pulse, which induced Mr. Cooper to take away a little blood, but he very properly desisted from it before four ounces had been taken, because the loss of this small quantity brought on fainting, and depressed the pulse, and the blood presented none of the appearances of inflammation, showing that the apparently increased action of the arterial circulation was the result of irregularity only, not of the excitement. Both these patients, instead of greater liveliness and quickness of manner, were dull and heavy: even Neill was so, in spite of his irritability and restlessness. Another diagnostic mark might be seen in the condition of their tongues, which were both coated with a thick, white, creamy fur, inclining to yellowness in the centre—a state of tongue peculiarly observed in great nervous irritation.

But, again, might not the intense pain, with sluggishness of the pupils, and dulness of countenance, and of intellect, with torpor of the bowels and slowness of pulse, indicate pressure from effusion of blood? In that case you would not have had a soft and small pulse, but it would have been full and laboured with the slowness; and in Neill you will observe it was actually quickened to 120. The pupils, it is true, were sluggish, but they were in

neither case dilated, nor on either side; and although they contracted slowly, yet this action was regular and uniform, and the diminished contractility of the iris was accompanied with increased sensibility of the retina to light, which would not have been the case if the nervous energy of the organ of vision was itself impaired.

On the whole, then, I judged that the symptoms in these two cases arose principally from their having lost too much blood, by which the circulation in the brain was rendered irregular in one or more of the ways I endeavoured to explain to you, by which, probably, a state of congestion was produced, the blood circulating with less force or less rapidity, or not equally, through all the vessels of the brain. You have lately seen an instance in which this congestion, without any attempt at excited action, was actually fatal.

[Mr. Hawkins here mentioned the case of a patient of Mr. Babington's, in which a woman, after an injury of the head, never recovered from the depression of the circulation, but gradually sunk some days afterwards, notwithstanding the free employment of stimuli, without any morbid appearances being observed, except a small quantity of serum in the ventricles.]

When, then, after injuries of the head, you observe from such signs as those which I have pointed out that the symptoms probably arise from disturbance only of the circulation, accompanied with a weak pulse, and other indications of debility, you must beware of further depletion, notwithstanding the intensity of the pain. You must cautiously increase the general strength of the patient by augmenting his diet, by giving him gentle stimulants of carbonate of ammonia and camphor, and nitrous or sulphuric æther. You may quiet the irritability of the brain by cold lotion, or by ice applied to the head, which frequently affords great relief. I do not like to employ opium, in any quantity at least, in this irritability following an injury of the head, though it is of great service in the similar irritability which arises from depletion after other morbid affections.

If there is evidence of vascular congestion, you can employ with advantage a few leeches to the temples. You saw, indeed, immediate relief from them in Edwards; slight local depletion being perfectly compatible with a general tonic system—the torpid vessels being thus unloaded, and the passage of the blood through them facilitated. Very often the patient is much benefited by small doses of calomel; under the use of which the tongue will gradually clean, and the other symptoms diminish. Neill was more benefited by mercury than by the leeches; and I have sometimes found a blister to the back of the neck required, to prevent effusion of serum, which you have seen may attend a state of irregular circulation, with depression of strength.

Under such a method of treatment as this, you observe that the symptoms are already much mitigated in Edwards, whom, in fact, I consider con-

valescent ; and I have little doubt that the same measures will be equally successful in the other patient. It is true, nevertheless, that you will meet with cases in which there will be more doubt than in these two persons ; yet if you have any doubt as to the nature of the symptoms, you will do well to stay your hand a little ; and if the symptoms are not mitigated by fair measures of depletion, which are most frequently called for in concussion, you should wait a little, observe the patient carefully, and perhaps try with proper caution the opposite plan of treatment. [Mr. Hawkins here mentioned a case of violent convulsions, which were stopped by allowing nourishing diet to a patient, who had been bled without benefit, quoting it from Mr. Brodie's paper on "Injuries of the Head."]

[*Medical Gazette*, vol. x., p. 681, August 25, 1832.

CLINICAL REMARKS ON

A CASE OF INJURY OF THE HEAD,

ATTENDED WITH PECULIAR SYMPTOMS.

I WISH, in the next place, to direct your attention to a very curious condition of the brain, which you ought to watch carefully as long as the symptoms last, as they are of a very unusual character. I allude to the case of John Atherton, 31 years of age, who was admitted on the 26th of January. He was unloading a barge of stone, and was standing under the crane, when the tram broke, letting the stone fall back into the barge, and it struck his thigh, fracturing it in the middle. On this part of the case, however, I will not dwell ; but there was also a slight graze of the surface of the scalp, over the occipital bone, which was to all external appearance uninjured, nor has there been any swelling over it. It seems, from the notes, that on his admission he was in perfect possession of his faculties, except of his hearing, which he recovered soon after his admission. He is said to be a regular and abstemious man.

On the following day, however, this state of matters was very different, and you may have seen him since that time in the singular condition of apparently being perfectly conscious of all that is done or said, and yet being unable to answer anything except "Yes," to every question or remark, whether applicable or not. If you say, "Are you better?" he will say "Yes ;" and then if you say, "Are you worse to-day?" he equally answers "Yes." It is as if he knew what he intended to say, but had not power to form the words he intends, as if, indeed, he had not command over the tongue ; for, if he is told to put out his tongue, he opens his mouth, but does not appear able to protrude the tongue. You see him at the same time

moving all the other voluntary muscles freely; he has a perfectly quiet, conscious look, folding his hands, perhaps, over his head; he follows you with his eyes, gives you either of his hands when you ask for it to feel his pulse, and holds it quietly; and his legs also move voluntarily, and he turns in bed, and uses his hands and arms as if to explain his meaning. Sometimes he commences some sentence not in answer to a question, but not getting beyond "Yes,"—and if you smile he often does the same. But, although he shows such an amount of conscious intelligence, and possesses sensation and voluntary power to the degree which I have mentioned, he is perfectly unaware of the calls of nature, and always passes his fæces and urine involuntarily in the bed.

On the 27th, the pulse being rather quick and full, but quite regular, I gave him fever diet, saline with antimony, and five grains of calomel, with a senna draught, which was repeated on the 28th. On the 29th, there was a variation in his symptoms, he became restless, trying to get out of bed, for which I ordered a morphia draught, and a blister to the nape of the neck, and, being restless and troublesome, the morphia was repeated at bed-time, and in the morning of the 30th. On this day I found that he had not had a good night, but had slept at intervals. The rectum and bladder had continued to act involuntarily, and he still answered, as he does to-day, only "Yes" to everything; and, for a very short time, the nurse observed the eyes twisted towards the right side, and the muscles of the right side of the face working spasmodically; but this convulsive movement has not returned. I found, also, that his pulse was only 72, quiet and regular, and his tongue moist, and his consciousness rather more than in the restless condition, which appeared to be passing off. I now, therefore, omitted his antimony, gave him some beef-tea and arrowroot, and directed half a grain more of morphia at bed-time; and to-day (the 31st) you see him quite quiet again, his pulse soft at 80. I have thought it right, however, to give him three grains of calomel now and at bed-time.

Now, what is the nature of the injury in this case? Something analogous to this man's state is occasionally observed after an apoplectic seizure, and the patient sometimes, when much more restored to his senses than our patient, remains unable to utter the words he intends, using the same wrong word always in the same place, asking for paper when he means sealing-wax, or sealing-wax when he means paper; and sometimes, being unconscious of his mistake, the patient, irritable in this disease, becomes very angry when he is not understood. Sometimes, too, you may see a patient able to write what he means, when he cannot frame the words with his tongue.

In such a case there is rupture of the inner fibres of the brain or internal effusion of blood; but a similar condition is not often seen in injuries. Still it has been noticed; for example, there is an interesting account by

Dr. Hennen, of an officer who was struck by a bullet, which fractured the skull, who for several days was constantly saying only something like "o" or "ther;" and he says that he at last asked his patient by writing, "shall I write to your mother," this being the word he had been so long endeavouring to utter; and he remarks, that he shall not readily forget the gratitude of the patient that his wishes had at length been recognized.

Is there, then, something of this form of internal injury of the brain in our patient? You see that his state is not one of ordinary concussion; there is not the sleepiness, and irritability, and excitable pulse, and expression of frowning, and suffering, and unwillingness to move or do anything which constitute that state of brain. It is not a condition of ordinary compression, for the senses are in a manner perfect; there is no absence of sensation or voluntary muscular power over the limbs and head which compression implies, though from some cause, which I am unable to explain, the actions of the rectum and bladder are no longer associated with the voluntary muscles.

There is no apparent fracture at the seat of injury, which does not, however, prove that there may not be depression of the inner table, such as you see in this preparation, without any depression of the outer table.

On the whole, the period at which the symptoms came on, points to hæmorrhage as their cause, perhaps under the seat of the blow on the surface of the cerebellum, with probably some bruising or partial laceration of its substance, though the absence of convulsions, except to the small extent I have mentioned, seems to show that there is no extensive or deep laceration. To this, perhaps, has been added some slight concussion of the brain, generally followed by irritation from disturbance of circulation. With these views you will understand the lowering in the first instance without depletion; the opiate followed by a blister and by calomel, to prevent congestion, after the period of restless excitement had passed, and the giving more nourishment when the pulse began to flag.

The chief danger for our patient is probably the occurrence of inflammation at a later period; but on the whole I am inclined to hope for his recovery, if there is not an internal effusion or rupture of fibres, as in apoplexy. The case is, however, a highly interesting one, which you will do well to observe carefully.

In the last lecture I drew your attention to a very remarkable case of injury of the head in a man named Atherton, in which case I expressed a belief of the existence of some slight effusion of blood, and bruise or laceration of the brain, and ventured to give a favourable prognosis, notwithstanding the total want of sensation and motion in the bladder and rectum. On the whole, there has been a gradual amendment in the patient's condition during the last week, though the main features remain in nearly the same state.

On the 2nd of February he continued to pass his motions unconsciously; but he had called to the nurse, though not in words, when she was at the table, and appeared to have recognized his wife, and to have asked for his child, but without more power of utterance; so that, when asked if his wife was the nurse, he could still only answer "Yes." His pulse was under 80, and rather depressed; and I ordered for him a mutton-chop, and a blister behind each ear, having on the previous day repeated his dose of calomel.

On the fourth he showed evidence, on two occasions, of greater sensibility, by making signs for a utensil to pass his water voluntarily; but only on these two occasions, and he was still unconscious of the passage of fæces, and he still only said "Yes" to everything. His pulse continued quiet and regular at 80, and he had not again been observed to have any twitching of the face, which had been once noticed. On the 5th he never once seemed aware of the water passing. Yesterday, the 6th, he was evidently better, having been able to say "No" in its right place in one or two answers, but at other times only "Yes;" but he had also for the first time put out his tongue, instead of only opening his mouth, when asked to put it out. His bowels still acted unconsciously, and the water generally so. His pulse was 92, however; and therefore I ordered another blister to the neck, and repeated the calomel; and to-day, also, the pulse is still about 90, but his quickness of apprehension and ability to answer seem to be better, and once he has made signs for something to receive the evacuations of the bowels.

He is, then, as I said, slowly improving; but, on the other hand, this is the twelfth day since the accident, and therefore his pulse becoming quicker may possibly indicate the chance of the inflammation which is apt to occur about this period.

[During the succeeding week this patient perfectly recovered the power of talking, and his mental faculties are quite restored, as well as the voluntary power over the sphincters, and he seems to be getting quite well.]

[*Medical Times*, March 1854.

SUBSTANCE OF A CLINICAL LECTURE.

Given at St. George's Hospital, June 8th, 1841.

1. Case of Fracture and Depression of Skull.—Effusion in Pleura.—State of Circulation in Brain, with exposed Dura Mater.
2. Injury of Head.—Symptoms of Inflammation or Debility?
3. Scalp Wounds.—Secondary Abscesses.—Fracture of Basis of Cranium.

AFFECTIONS of the head are always an interesting subject of consideration, and there are several at the present time under your notice, of which I will select three, as they offer some important practical suggestions; and some

questions have been asked me, which show that several points connected with them are not well understood by all of you.

I. The first case is that of a little boy, William Lyons, æt. 13, admitted March 24th, into Cholmondely Ward, with caries of the anterior part of the right parietal bone, with an opening through the skin, about the size of a sixpence, exposing the dura mater. Tongue clean; pulse quiet; no pain in the head; sleeps well at night; countenance pale. States that about three months ago he was carrying some chairs on his head, when he happened to fall down, and received a blow on the head from one of the chairs. He was not insensible after the accident, but only perceived a swelling on the head after the blow. This did not disappear, and was opened about a month afterwards, when some pus escaped, since which time it has continued to discharge, but he has not perceived any bone come away. This account is corroborated by the information we have received from the house-surgeon of the Westminster Hospital, where he was admitted a fortnight after the accident, and where the swelling was punctured, and found to contain only pure pus; but this gentleman says that bone was felt deeply situated, as if in the substance of the brain. During all the time he was there he suffered from no symptoms of consequence, and neither brain nor bone escaped through the opening. At the time of his admission our notes say the probe passed under the scalp to some distance beyond the opening (about an inch and a quarter by an inch, in size); and bone is felt of apparently the natural thickness, with an abrupt margin on each side. In the interval no bone is felt, and only the dura mater (as it seems) presents itself, which is vascular, and bleeds from the touch. The pulsation of the brain is also seen in the whole space where the bone is deficient, as if there was at present no depressed bone in that situation below its natural level.

1. Such is the history which was obtained of this boy when he was admitted, and from it we should gather that the bone had been broken and depressed at the time of the accident, with laceration of the dura mater, followed by slow suppuration: if it were so, there is no account of any bone having ever come away, and therefore it must still remain in, since the surface exposed is at too great a depth to make us suppose that the depressed piece could have remained partially attached to the dura mater; and unless so attached, it, of course, cannot have been absorbed, as the process of absorption of bone requires some living vascular action. If the bone is lodged in the brain, it has, at any rate, excited not the least irritation since the boy has been in the hospital, and it appears that he has not suffered previously from any affection of the brain. I must confess, however, that I have some doubts upon this point, since the living surface, which is visible, is quite smooth and level, and looks just as the dura mater would have done if it had been uninjured. What can have become of the bone then, you will

ask? Why, it is not at all impossible that the injury, and the pressure of blood effused under the pericranium, may have caused the absorption of a portion of bone with caries, which would go on enlarging the opening when once formed, especially in a scrofulous boy, since you know that scrofulous caries, taking place spontaneously, will occasionally produce this result. And the course of the local changes, since he has been in the hospital, is just like such an action, as there is some thickening of the soft parts around the opening, and another spot lower down has suppurated in the scalp, and the caries, which now exists, has been attended, as it often is, by the death of some of the diseased bone; so that in the early part of May I removed several small pieces of dead bone from around the opening, in that part of the bone which preserves its natural level; and some of this may have been felt when the abscess was opened. I will not dwell more, however, upon this part of the case, but will pass on to a second event in his history, which is interesting, though not connected with the brain.

2. The boy was observed on his admission to be very languid, and pale, and weak, and in a few days he had a good deal of cough, with some pain in the side, and we found that he scarcely breathed with the left side, which was quite dull, except just at the upper part; and in a day or two more we found that this side was actually larger than the other: in short, he must have had pleurisy before he came in, with effusion of water or other liquid into the chest, sufficient almost entirely to compress the lung, so as to prevent the ingress of air. The little irritation he had, when our attention was first drawn to the chest, was easily subdued, particularly by blistering; and on the 8th of April our notes tell us that more air seemed to enter the lung, but at the same time that he had more cough, no doubt from the compressed lung beginning to expand a little, as some of the fluid was absorbed. He continued to have a little cough, but no constitutional irritation; and the fluid was gradually absorbed, but without much further expansion of the lung, till, our notes tell us on May 24th, that no air enters the chest below the fourth rib under the scapula, and in front it cannot be heard at all; but now, instead of the chest on this side being larger than the other, the thorax is perfectly flattened, and measures an inch and a half less from the spine to the centre of the sternum than on the other side. The heart at the same time beats over a large space, and is enlarged, as it would appear, from rheumatism. You have thus an excellent example of the absorption of fluid from the chest without operation, while the lung has only expanded to a small extent; and the effect of this alteration of size is generally to make the spine curve to the side, with depression of the shoulder.

3. I will, however, chiefly dwell in this case on the state of circulation in the brain, as you can see it going on through the aperture in the skull, as it

does not seem to be well understood among you all; and there are many important inferenees to be derived from a eonsideration of it, aeeounting, as this eonsideration will do, for the obseurity so often observed in injuries and diseases of the brain, in whieh exaetly the same symptoms ean often be traeed to different, or even exaetly opposite eauses.

a. Look, in the first plaee, at the exposed surfaee of the brain in its habitual, I was going to say in its natural state, and you will see that there is an arterial pulse in it, so that there is an alternate rising and falling exaetly eorresponding with the systole of the heart: it rises as the arteries beat, and falls again till the next stroke of the heart; in other words, the brain aetually eontains more arterial blood at one time than at another.

b. Look again, when I have opened an abseess, or taken out a pieee of bone, or when he has risen quiekly off the bed, or has been subjeeted to any other kind of exeitement, and you will pereeive that the eavity below the aperture is lessened, and that there is also more pulsation than in the quiet eondition; that the brain is kept permanently higher, rising and falling alternately, but quieker than before, and never falling so low; eontaining, in short, a little more blood altogether, and having more entering it in a given time.

c. Then make him breathe deeply, or eough, and you will see that the brain rises still higher, so as even to expel the matter in a stream by the impulse of eoughing; in faet, besides the beating of the pulse, there is a rising and falling of the surfaee in eorrespondenee with respiration; that is, not only 80 or 90 times from the pulse, but 18 or 20 times, to a greater degree still, from breathing. During eaeh expiration the ehest is depressed, so that the venous blood is prevented from deseending, and is aeeumulated in the veins and sinuses of the brain, so as to elevate the dura mater, whieh again falls in eaeh inspiration by the weight of the atmosphere, the air entering the air-vessels, and the blood getting into the veins of the ehest by the elevation of the ribs and the depression of the diaphragm, out of the distended veins of the brain.

But most of this is only because there is an opening in the skull, allowing the air to enter and make pressure on the surfaee of the brain, and you are not to suppose that the natural state of the eireulation is exaetly of the same kind. When the eranium is entire, the atmospherie pressure ean only be felt at the various orifiees at the base of the skull, and will there present any sueh vaeuum between the dura mater and the level of the skull as we ean now see; and as the substanee of the brain is ineompressible, there eannot possibly be the variation in the quantity of blood eontained in the brain, whieh there is in our patient Lyons, with sueh a defieieney of the bone.

a. With regard to the arterial pulse in its natural state, we see more blood in the arteries during the systole of the heart, making the brain rise. So it is also when the bone is entire; but as the brain cannot rise, there must be at that time less in the veins of the brain.

b. So again in the excited condition of the circulation, we can see more arterial blood constantly in the brain. There is also, with an excited pulse, more arterial blood always in the head, if the cranium is entire; but then there must be still less in the veins than in the quiet state of the circulation, as the brain cannot rise upwards as we see it now do.

c. And, with regard to the elevation of the brain in our patient in expiration, there is also a similar impediment to the descent of the venous blood, when the bone has no aperture in it; but if the veins and sinuses contain more blood, there must be less in the arteries, which therefore are not at those times allowed to be so well filled by the action of the ventricle as in inspiration.

Thus, then, in the natural circulation there is a variation in the relative quantity only of the arterial and venous blood, not in the absolute quantity contained in the whole brain; but as this variation is taking place every second of time, you may easily believe that it must be of great importance to the functions of the brain. But this is not all: there are other circumstances to be taken into account in the physiology and pathology of the brain.

d. If the brain contain a large relative quantity of *arterial* blood, this will be circulating chiefly in the interior of the nervous substance, separating the fibres and elementary particles, and stimulating their substance, it may be, to a healthy performance of its functions; or it may be, to an undue degree, producing inflammation or other mischief.

e. If, on the other hand, there is a disproportionate quantity of *venous* blood, this will be circulating chiefly on the surface of the organ, including the spaces between the masses of the encephalon; whence we may understand the effects of venous congestion in the production of sleepiness, stupor, paralysis, or other signs of weakening of the functions of the brain, or perhaps, like the influence of poison on the brain, causing delirium, convulsions, apoplexy, and so on, by means of this black blood.

f. But, further, we have seen a difference not in quantity only, or relative proportion of blood of different qualities, in different periods of the same kind of circulation, but in the rapidity also with which the same relative quantity of arterial blood passes through the brain in a given time. Much more arterial blood will actually circulate through the brain with a strong heart than with a full one, or with a quick pulse than with a slow one, the strength of the heart being the same:—or a feeble heart, beating very rapidly, may send more blood through the brain than a stronger one acting

more slowly ;—and a continued steady impulse on the substance of the brain must be very different in its effects from those of an irregular or intermittent state of circulation through its texture.

g. Then, finally, besides all these varieties of circulation through the whole brain, influencing all the encephalon alike, you must recollect that there is irregularity as to particular parts of these organs. Doubtless, for example, there is a greater state of vascularity in the forepart of the brain in this boy than there is naturally ; and if this be so, when there is no aperture in the cranium, and the patient often refers us to one particular spot as the seat of pain when there is an abscess or a tumour, there must necessarily, in accordance with what I have previously said, be less blood than natural in the remainder of the brain.

Now all these circumstances influence our practice in the treatment of cerebral affections of any kind. We take away blood, and give nitre or tartar emetic, and use other measures to lessen the quantity of arterial blood, or moderate the force with which it enters and circulates through the brain, when there is undue action of the heart, or what is called determination of blood to the head. We can relieve the oppressed brain in many cases of plethora, or venous accumulation, by taking away a small quantity of blood, so as to enable more arterial blood to circulate ; and thus very often we restore the functions of the brain and of the lungs at the same time, whether the cause of the oppression may have originated in the brain itself, or in the heart, or in the lungs, these several organs being so connected together.

In another case of passive venous congestion we overcome it by stimulating the heart, so as to make it propel more red blood upwards ; or even by change of posture, so as to facilitate the passage of the venous blood downwards : the difference of lying down or sitting up being sufficient to determine a question of life or death. Then, again, we give stimulants to a feeble heart, so as to restore a healthy action to the brain, when insufficiently supplied with arterial blood, whether in absolute quantity, or in rapidity, or force of propulsion. You can any day see the influence of this latter circumstance in cases of delirium traumaticum, in which perhaps the pulse may be beating at the rate of 150 in a minute, with great apparent quantity of blood in the vessels of the head ; but where your patient will yet die with furious delirium, unless you increase the force of the arterial impulse, by some of that gin by which his brain has been habitually stimulated, and by which he will directly be quieted of his violent exertions of mind and body, and fall perhaps into a gentle and refreshing sleep. Or, again, if we see a person dying from loss of blood, and insensible because the brain has so little stimulus of its necessary circulation, we may perhaps, when time is not afforded for food or drink to enter the blood, restore his consciousness and

save his life, by transferring some from another person, which may directly be sent up to our patient's sensorium, to afford it the requisite and natural stimulus.

II.—No wonder, then, that we should be offered some great similarity of symptoms from apparently opposite causes; because, in fact, these opposite causes may in effect produce the same state of circulation in the brain, in one of the several circumstances which we have been considering. No wonder, moreover, that we should often be at a loss in our diagnosis of these causes, and actually puzzled whether we should bleed or stimulate our patient—whether we should increase or lessen the vigour of his circulation. To illustrate this point let me next draw your attention to another case now in the hospital; it is that of Jane Looker, æt. 32, admitted May 24th, into Wellington Ward, with these symptoms:—Complains of great pain in her head, equally diffused over the whole of it; pulse 90, regular, and rather weak; tongue clean and moist; bowels open; no anxiety of countenance, or frowning; not much appetite. She states that about a month ago she received a blow on the upper part of the head, which stunned her for about ten minutes, ever since which time she has had great pain in the head. She was cupped a week since, which relieved her for a time, but owing to working hard and drinking some porter, the headache returned, and is now as bad as ever. She is at present suckling a child eight months old, and has been living poorly of late, and was getting thin and out of health before the blow.

Here, then, is a case that might at first be regarded as an instance of inflammation after concussion, from the acuteness of the pain the woman complained of. You find that this view was taken of the case before her admission, and she was actually relieved by the cupping which was ordered. So it is, however, in many cases of weak and irregular circulation, and the temporary relief is succeeded by an aggravation of the pain. You find again that she attributes her return of pain to the stimulus of porter; but neither does this prove that the stimulus was injurious, since she was at the same time imprudent enough to return to hard work, which would naturally make a weak person suffer.

The whole state of the patient, however, left me little room to doubt that the pain was not likely to be inflammatory, and particularly the colour of the countenance, and the absence of anxiety and frowning, which inflammation almost always produces; the absence of sharpness and force of the pulse, although it was somewhat quick and jerking, and then the discovery of the fact of her having suckled up to the present time, and that in a condition of great privation. This long-continued suckling is, without any injury, a

fertile source of derangement of the health generally, and of amaurosis, pain in the head, or mania in connection with the brain.

I let her lie quiet, then, with some cold lotion on the forehead, till the day after her admission, giving her only some more nourishment. The pulse the next day, the 25th, was only 80, and soft; and the pain was a little better, but still much complained of. I therefore ordered her some ammonia draughts, and a small blister to the nape of the neck. On the 29th our notes say the pain was rather better.

On June 1st I gave her some bark and aromatic confection, the countenance being more cheerful and a little more florid, but the pulse still weak, and gave her also a little porter.

On the 5th it seemed as if this was rather too much, the pain in the head being still complained of as much as before; and I gave her some Sp. Ammoniæ Fœtidus and Camphor Mixture instead of the bark, letting her diet remain as good as it had been; and now you may see her convalescent.

There are many such cases as this which will come under your notice after injuries of the head, in which, if you are in any doubt, you should do little, but rather watch your patient; or if your opinion is a little inclined to either side, you should proceed very cautiously, whether with the plan of depletion or of stimulation, lest you should find yourselves in error, or lest a change of plan should proceed a little too far; and there are many cases in which you will require even a combination of both principles of action. A man, for instance, fell from a ladder, and was bled after his admission for the symptoms of concussion, the house-surgeon not being aware that he had also been bled just before his admission and very soon after the fall: he was for many days in a state of complete oppression of brain, with a slow and laboured pulse, and nearly total insensibility, and from want of nervous power there was the same torpor of bowels which is so much more common in diseases than in injuries of the brain. Now the state of this man was much more owing to a large loss of blood than to the fall, and his tongue was thickly coated with a white cream that indicated a very disturbed state of circulation in the brain, but is not usual as a consequence of injury; but although this man required a good deal of light nourishment, and some diffusible stimulants to hasten the passage of the blood through the brain, he was also much benefited by blisters to the neck, and by small doses of calomel and opium.

In some of these cases you will find even a cupping glass, or a few leeches to the forehead or temples, when there is intense pain, not at all incompatible with moderate stimulation of the general system; local congestion or inflammation being actually the consequence of feebleness of the circulation,

and requiring the same local remedies, and the same effects on the capillaries of the part, which would be requisite in another case in which the general circulation was in an opposite condition; and for this purpose a blister, which I gave to our present patient, is very efficacious.

III.—In the next place you have had several scalp wounds in my last accident week, under your notice, all of which, however, seem to have done well, except one case, in which the patient died yesterday; and you will presently have an opportunity of examining into the causes of his death.

This was a boy, twelve years of age, named Robert Sims, who was admitted May 17 into Oxford Ward, with a small scalp wound on the posterior part of the head, and a slight graze on the right side of the forehead. The bone was slightly exposed under the posterior wound. He was kicked on the back of the head by a horse, the force of the blow knocking the forehead against a wall. He was insensible for a short time after the injury, and vomited previous to admission. Countenance pale; pulse weak.

18th, 10 A.M.—Has vomited during the night, and also this morning. Reaction having taken place, he has now much pain in the head; skin hot; pulse hard and full; tongue white.

V. S. ad ℥vj.

℞ Hydr. Chloridi, gr. iij.; P. Antim. gr. iv. statim. H. Sennæ post hor. iv.

1 P.M.—Pain in head much relieved. Pulse more soft, but still sharp. Blood not buffed.

19th.—Tongue clean; very little pain in head; pulse quick; wound rather sloughy.

31st.—Having been somewhat better, he last night was found to have had slight shivering, and to-day his wound is foul, and the scalp somewhat œdematous around it. His mouth is observed to be drawn to the left side by paralysis of the right portio dura. Pulse 104, small and weak, as it had been since the first inflammation on the 18th; tongue coated; countenance pale. An incision was made down to the bone, which was found exposed to some little extent.

June 1st.—Pulse 130, weak; skin very hot; some anxiety of countenance; has been wandering in the night. Some inflammation around the wound; complains of pain in the left knee.

2nd.—Delirious during the night. Wound in head clean, without œdema. Complains of obscure pain about the thigh and hip. Skin hot; pulse as quick, but weaker.

3rd.—Tenderness and pain in groin continues; less in the knee.

4th.—Countenance yellow and anxious: much enlargement in the upper

part of the thigh at the anterior part, but there is not so much pain as there was. Tongue dry, and rather brown ; pulse quick and weak.

5th.—Countenance more yellow ; has had some shivering ; swelling in groin somewhat increased ; tongue brown.

He gradually sunk, and died yesterday morning, June 7th.

Here, then, is a case of apparently trifling scalp wound, with symptoms of pure concussion, which yielded easily to common treatment on the day after the injury ; after which the boy continued quite well for about twelve days, when a fresh set of symptoms commenced, which have ended fatally in about a week more ; and it is to these symptoms that I will direct your attention. The symptoms were those of low inflammation somewhere, producing irritative fever, with delirium and rigours, indicative of a debilitated state of nervous system : where, then, was the chief cause of these symptoms ?

In the first instance they might have depended on inflammation of the wound itself, which became foul, and the scalp swelled ; but the incision relieved this state of the part, but only very partially alleviated the general condition, and therefore some other situation was to be looked to. Did the symptoms depend on low inflammation of the membranes of the brain ? From the increased inflammation of the external parts it was of course not at all improbable that this might spread through the bone to the dura mater on its inner surface, and so to the inner membranes and substance of the brain, which extension of inflammation is so common in scalp wounds, and so often fatal. The only symptom directly referable to the head was paralysis of the portia dura, but this is not a frequent result of inflammation of the brain, and by itself would be of little importance ; and, from inquiry, there seemed no doubt that he had had this dragging of the mouth for a long time before the accident, and it may have arisen from some local cause. Then, again, the boy was very drowsy and sleepy, and he was sometimes delirious when left alone or quiet during the night : these symptoms are very common in diffuse inflammation of the membranes of the brain, but not at all conclusive ; for you saw the boy in the opposite bed, with abscesses of the leg and foot, with just as much sleepiness, and with some delirium also, although his head was perfectly free from mischief. We cannot, therefore, be certain upon this point, and we only know that there was fever, in which some of the functions of the brain participated. Next, we observed that he complained of very severe pain about the knee-joint : was an abscess taking place there, secondary to the suppuration of the scalp ? Motion caused much pain, but there was no swelling, and little tenderness, and the next day the thigh and groin were equally complained of and the knee got better, and from the swelling of the thigh it was equally clear that suppuration had taken place there ; but whether it is in the vein or in the hip-joint, or diffused

among the cellular tissue between the muscles, is not very clear; nor, indeed, whether there is not matter in the joint and external to it, and possibly in the knee-joint likewise, as these abscesses often give little local sign. But may there not be suppuration elsewhere? It seems to me not at all improbable that there may be some in the liver, as he became quite jaundiced for two or three days before his death, and had a little tenderness over this part. Finally, though we have no direct evidence of suppuration in the brain, and on the whole I think there is not, yet there may be some there also, in addition to what we know is about the hip, and what we suspect may be elsewhere.

The symptoms, then, with which this boy has died are those of suppuration of a low kind, and the exact seat of this we shall presently see: but why is it that these secondary abscesses are so common after scalp wounds of apparently very trivial importance? Their immediate cause seems to be the absorption of a poison generated in the secretions of the injured part, or formed even without injury, as in erysipelas; this poisonous material being apparently an unhealthy purulent lymph rather than common pus. I do not mean that there is (as some have imagined) an absorption of pus from one part, and a deposit of the same pus elsewhere, though it is not even impossible that some pus may sometimes actually pass through the kidney; but I mean only that the poison getting into the blood induces such a state of this fluid, that the capillaries of various parts become disposed to suppurative inflammation, in the same manner as a few drops of pus containing the syphilitic poison make the small vessels of various parts and different textures put on a morbid action, which may pervade almost the whole body.

Some deny this absorption, and undoubtedly it is not a necessary circumstance in theory; we have something analogous to it, for instance, generated in typhus fever, where what are called critical abscesses are formed in various parts of the body in consequence of some general condition of the blood produced by the fever; or again, it may be analogous to the diseased condition of the system in scrofula, where a number of local abscesses are formed; or analogous to the state of system in malignant disease, where a common cause is in operation on the capillaries of many parts at once. It is very possible, therefore, that the irritative fever attending the injury of a scalp wound may produce secondary abscesses, without direct passage of any secretion into the blood; but I think the balance of evidence is immensely in favour of such absorption, and in many cases you may actually see the purulent liquid in its transit.

There are two ways by which the pus may get into the blood; one is, by the absorbent vessels, and I have seen in a case of diffuse inflammation of the uterus, after premature parturition, an immense number of the absorbents of the uterus and adjacent parts quite filled with pus of this unhealthy

character quite up to the receptaculum chyli. This mode of transit, however, does not seem to be nearly so frequent as a second mode, namely the passage of pus through the veins. Some persons believe that there is always inflammation of the veins before these secondary abscesses form, but I am not certain that this is the case, though generally some veins may be found inflamed in connection with a wound from which secondary abscesses have arisen. Sometimes the great veins are filled with lymph and coagulum mixed with purulent matter, but this is not often the case in comparison with the numerous small ones immediately around the wound, in more or less of which some inflammation may almost always be found by careful examination. Without much inflammation of their inner membrane, however, the veins may yet form a channel of communication with the blood; some of them being opened by the wound, or by incision, or by ulceration, or possibly allowing a poisonous influence even to transude through their coats.

You may ask, perhaps, why such an event does not happen when the matter of an abscess is absorbed, so that the pus must get into the blood; the answer, however, would be, that it is not pus, properly so called, but unhealthy purulent lymph, which produces this poisonous effect upon the blood. The reason of the unhealthiness of the secretion would appear to be a peculiar state of the constitution in those who receive the injury, so that while it is very seldom that you meet with secondary abscesses in one so young as this boy, they are very common in the miserable state of so many of our patients, who have ruined their constitutions by intemperance. Then, again, the circumstance is undoubtedly much under the influence of atmospheric causes, of the same kind exactly as those which occasion erysipelas and inflammation of cellular tissue and serous membranes; so that at one time almost every case is in danger of dying of one of these affections, while you will, at another time, see several months elapse without witnessing a single case.

These secondary abscesses are peculiarly fatal—perhaps I should say the state of irritative fever which accompanies them, or rather precedes them for a few days; so much so, in fact, that you will seldom see your patient recover, when once the rigours and perspiration which indicate their formation have been observed. Still I have known cases recover even after abscesses have actually formed; and occasionally when even a vital organ, such as the liver or lungs, is attacked by the inflammation which ends in these abscesses, the patient may eventually recover: I have more than once seen much tenderness of the liver and complete jaundice recovered from, though certainly it is a rare occurrence. I have a lady under my care at the present time, on whom I operated for hernia about five weeks ago, succeeded by some sloughing and foul ulceration of the omentum and other parts covering it, who has had very copious foul suppuration suddenly bursting

from one lung, to the amount of nearly a pint in the day, who is nevertheless recovering from it; the abscess having, no doubt, I think, been of this description. Commonly, however, they are much too numerous to be thus got rid of.

It only remains for me to speak of the treatment applicable to these local secondary inflammations, which, from what I have just said of their fatality, need not detain us long. One thing appears to be quite established, namely that the inflammation is of a low character, which does not bear general depletion, though local bleeding by cupping or by leeches may probably be of service: certain it is, I think, that a patient will die much earlier who is weakened by antiphlogistic means, and that a moderate system of support by nourishment and medicine seems to offer a much better chance to the patient of struggling through the irritative fever of these abscesses, or of the poison which causes them; the stimulus you give being of course proportioned to the degree of debility and prostration present in each case. In this boy no depletion could possibly have been thought of, and the depressed state of circulation in the brain, shown by the sleepiness and low delirium, and rigours, required moderate stimulus, and that equally whether the membranes were inflamed or not. Besides the common rules of treatment applicable to the symptoms present, I am inclined to think that much good is done by small doses of calomel and opium, which may act on the capillaries in such a way as to prevent suppuration; and this is almost the only thing that I much trust to. Possibly, too, another medicine may be of service which also seems to influence the capillaries, as in iritis and some cases of peritonitis, viz., turpentine; I have not tried it, however, often enough to speak with the same confidence that I can of the other. Besides these means I have seen much good done by the application of blisters to the part inflamed; to the nape of the neck in a case of scalp wound, or over the lung or liver when those organs are the seat of the disease.

Post-mortem examination after the lecture, thirty hours after death, copied from the case book.—On removing the scalp the pericranium was found considerably separated from the bone opposite the part where the posterior wound had been. The roof of the cranium being taken away, a small quantity of purulent lymph was perceived on the dura mater, just under the superior angle of the occipital bone, and also some in the groove for the superior longitudinal sinus. On raising the dura mater some pus and yellow turbid serum were seen at the posterior part of the left hemisphere of the cerebrum, and some thick viscid pus on the corresponding part on the right side; this also extended into the fissure between the two hemispheres. There was a fissure in the occipital bone, which extended from the protuberance down to the foramen magnum, and was much more distinct on the inner than on the outer table. Some coagulated lymph was adherent to

the inside of the longitudinal sinus, and two or three deposits of purulent matter were seen in the substance of the dura mater.

In the femoral vein of the left side, near the hip, was a small quantity of coagulated lymph adherent to the inner membrane. The hip-joint was full of pus, while the cartilages were apparently healthy. The periosteum of the neck of the femur, and for some way down the shaft of the bone, was separated from the bone by a little fluid. There was suppuration in both sterno-clavicular articulations, but none in the knee-joints. The viscera appeared to be all healthy.

[*Medical Gazette*, vol. xxviii., pp. 953-983.

SINGULAR CASE OF FUNGUS CEREBRI,

From a Gun-shot Wound.

To the Editor of the London Medical Gazette.

Sir,—I am not aware that any example of fungus cerebri is on record, in which the protrusion took place from the base of the skull, and came through the wound, from so distant a source as in a case which I have lately met with. If you think it deserving of a place in the *Gazette*, it is at your service.

I am, Sir,

Your obedient Servant,

Cæsar Hawkins.

31, Half-Moon Street,
May 17th, 1832.

On the 2nd of May, W. P., a fine boy of eleven years of age, being in a room where there were several pistols, took down one of them and looked into it, in order to ascertain whether it was loaded; in doing which it went off, and the contents entered the face just below the right eye, making a small wound, and remaining in the head. There was considerable hæmorrhage from the wound, as well as from the nose and mouth, and from the right ear. When I saw him he was faint and cold, and in a complete state of collapse, but sensible to pain when he was touched, and he had vomited slightly. The right eye seemed to be uninjured, and the left was observed to be a good deal turned inwards to the nose, but the pupil acted readily. From the probable course of the ball, and the quantity of venous hæmorrhage from the ear, it appeared to me that the temporal bone was probably fractured, so as to rupture the lateral sinus; and the extreme degree of collapse rendered it not impossible that the ball might have gone through the bone into the cerebrum. His alarming state induced me to avoid any violence with a view to the extraction of the bullet, lest any internal

hæmorrhage which might be going on should be increased; he was left, therefore, perfectly quiet, directed to be kept quite cool, and to take nothing but cold liquids.

During the remainder of this and the next day he continued in a state of restlessness, turning from one side to the other, but sensible to pain, and capable, when roused, of answering, and giving a clear account of the manner in which the accident happened. He vomited occasionally the contents of the stomach, mixed with a good deal of blood, which appeared to come from the wound, as the bleeding from the ear still continued. The circulation had risen a little, but he never required depletion, the pulse being for the most part not more than from 80 to 90, and weak. The face and eye-lids were swollen, but without much tension.

On the third day he was perfectly quiet and rational, the swelling began to subside, and suppuration took place freely from the wound and from the ear. A probe passed from the wound towards the ear, to a depth of about four inches, through a quantity of splinters of bone, and at the bottom struck what appeared to be the bullet; and a probe passed also through the meatus, in the midst of similar splinters of broken bone; so that, from both examinations, about one inch inwards and forwards from the ear seemed to be the situation of the bullet. It was clear, therefore, that part at least of the temporal bone was fractured, yet he heard perfectly on this side, so that the labyrinth must still have been uninjured.

During the next three days he went on very well, without any symptoms attributable to injury of the brain. The swelling of the face and fauces, which had produced some difficulty in swallowing and speaking, wholly subsided, and several pieces of bone, and a small portion of lead, were taken away through the wound and through the ear. On the 9th, however, he again became restless and irritable, and started much in his sleep; he complained of pain in the back and abdomen: the whole of the muscles of the trunk were in a state of spasm, so that even if his head were moved the whole body was turned with it, though, at the same time, the muscles of the legs and arms, and the lower jaw, were perfectly under his control. He afterwards became hurried in his manner, then delirious, singing and talking incessantly, and attempting to get out of bed, and at last was quite unconscious of what was passing around him. At the time these symptoms of irritation commenced, the discharge from the wound and from the ear became dark-coloured and bloody, and some blood was discharged with pieces of bone. On the evening of the 9th a protrusion was observed, apparently of cerebral matter, through the wound in the face, which increased to the size of a walnut, but was afterwards pushed off. He died on the 10th, just eight days from the accident.

It was found that the bullet had passed through the junction of the malar

and maxillary bones, breaking up completely the floor of the orbit; thence it passed to the inside of the lower jaw, through the external pterygoid muscle, having so far injured the joint that both the glenoid cavity and the condyle of the jaw were denuded of cartilage and periosteum, and a little piece of the inside of the condyle was broken off. The bullet had then broken up the junction of the sphænoid and temporal bones, in the fossa between the sella turcica, the petrous portion of the temporal bone, and the lesser wings of the sphænoid. The glenoid cavity and the meatus were of course loose, and a fracture extended across the petrous portion of the temporal bone, a sharp point of bone having pricked the dura mater and entered the lateral sinus. The inner part of the petrous portion was thus detached, but the carotid artery and the jugular vein were uninjured; the ball itself, which was much flattened, being situated just below this inner part of the temporal bone, where it had been perceived by the probe.

Through the wide opening thus made in the sphænoid and temporal bones, the brain protruded in considerable quantity into the cavity made by the bullet, and was in the usual vascular and pulpy state of fungus of the brain; the substance of the cerebrum around this softened part was vascular, and of the yellow colour generally found in such cases. A small layer of coagulated blood was perceptible on the surface of the right hemisphere, and upon the tentorium.

The veins of the brain were full of blood, but there were little signs of inflammation, except around the junction of the optic nerves, which were slightly covered with lymph.

It may seem doubtful whether the dura mater and the brain had been directly wounded by the bullet at the time of the accident; but, as the symptoms were at first those of concussion only, and the fatal symptoms occurred suddenly, after the boy had been gradually getting better, I think it more probable that the blow had produced contusion only in the first instance, giving rise to the small effusion of blood, which has been mentioned, and that the dura mater being bruised, and deprived of its support, had sloughed, so as to allow of sudden protrusion of the brain at the time the delirium and other signs of irritation were observed. And it seems probable that, but for this protrusion, the boy might have got well, as he had recovered from the concussion, and had no inflammation, the pulse being soft and natural, and only 80, just before the protrusion took place, and the wound itself being healthy, and allowing plenty of room for the extraction of the remainder of the bones and of the bullet.

Fracture of the bones of the cranium, allowing of the formation of fungus cerebri, has been observed in every part of the upper surface and sides of the head, even so low down as to admit of the escape of brain from the side of the middle lobe through the ear; but I am not aware of any instance in

which fungus took place from the base of the brain, as far inwards as in this instance, by the side of the sella turcica; and the case seems on this account curious. It shows how necessary the support of the cranium is to prevent fungus cerebri, as it took place through a wound of four inches in depth; and it shows also how distinct the symptoms arising from protrusion of the brain are from those of inflammation, although, no doubt, the fungus cerebri is often accompanied by inflammatory symptoms.

Another point deserving notice is the preservation of the sense of hearing, although not only the tympanum was empty, and the external ear completely separated, but the whole temporal bone so shattered that the fractured portions left not enough entire to include the whole labyrinth, but must actually have broken across one at least of the semicircular canals.

[*Medical Gazette*, vol. x., p. 251.

CASE OF ABSCESS WITHIN THE CRANIUM, DISCHARGING THROUGH THE EAR.

Matthew Palin, æt. 28, admitted August 24th, 1835, under the care of Mr. Hawkins, and giving the following history of his complaints. Three weeks ago he received a blow on the chest, in a quarrel, and, in attempting to retaliate, he struck his head against the edge of an open door. The blow caused a small wound on the right side of the forehead, with much ecchymosis, though with very little external hæmorrhage. This caused intense pain in the seat of the blow, which in a few days became more general over the whole forehead. A week after the injury he became delirious, and made repeated attempts to destroy himself. It appeared also, from his wife's account, that he was habitually very low-spirited. Pulse rather quick and small; tongue white, but tolerably moist; slightly delirious, but easily roused from it. Complains of want of sleep, and frowns much, with an expression of much anxiety. It was with some difficulty that he was persuaded to remain in the hospital, on account of the apparently urgent nature of his symptoms.

25th.—Blood not inflamed; pulse frequent, with less jerk, and weaker. Pain in the head not at all abated. Slept badly; slight wandering, and great restlessness.

It now appeared, from his own account, that he had been subject, for *some years*, to a discharge from his left ear (which is not, however, now perceptible), on the cessation of which he becomes quite deaf. It could not, however, be ascertained that he had had more pain on this side than on the other since the blow, but still Mr. Hawkins thought it very probable that

there was an abscess in the brain, discharging by the ear, as the symptoms were different from those usually produced by suppuration following a recent blow.

26th.—He has passed a better night, and though he says he is not free from pain, yet it is not so great as yesterday. Pulse more perceptible, but labouring. Seems a good deal under the influence of the morphia, of which three doses were given before the pain was relieved.

27th.—He was restless during the early part of the night, getting out of bed twice, to go to the water-closet; after this he became to a certain extent comatose, and died at 10 o'clock in the morning.

On examination of the seat of the injury there was found no mark of any mischief, either in the bone or its coverings; nor was there any extravasation in the brain. There was no unusual vascularity, and the quantity of fluid in the ventricles was not unusual. On carefully raising the left hemisphere of the cerebrum, it was found to be soft and discoloured, easily lacerable, and partly adherent to the middle fossa at the base of the cranium. In the interior of the middle and anterior lobes was a large abscess, containing about three ounces of foul pus; and the parietes were to some extent soft and green, as if nearly gangrenous. At the bottom of the abscess the brain adhered to the dura mater, covering the thin roof of the tympanum, in the centre of which a small opening in the dura mater allowed a probe to strike on dead bone, about the size of a sixpence; the dura mater to this extent being separate from the bone. With some difficulty a very small aperture was discovered in the dead bone, which allowed a lachrymal probe to enter the cavity of the tympanum, the membrane of which was partially destroyed.

It was thus manifest that he must have had the disease in the brain for a considerable time, the discharge from the abscess occasionally ceasing, as is usual in such cases, producing in him only deafness. The utmost that the blow could have done was to hasten his death, by exciting the abscess already existing. The man with whom he was quarrelling when he ran his own head against the door, is, however, to be tried as the cause of his death, though the only blow which he would seem to have given the deceased was, not on the head, but on the chest.

Instances like the above, in which abscesses within the cranium communicate with the ear, are by no means very uncommon; and it is therefore of importance that we should keep in mind the necessity of a guarded prognosis in such cases. It has generally been assumed that the disease originates in the ear, and spreads to the parts within the cranium; but this is by no means well ascertained, and some of the circumstances would rather lead us to believe that the disease travelled in an opposite direction. We allude particularly to the fact that those cases in which the ear is unequivocally the

primary seat of disease (as from cold, from the inflammation spreading along the Eustachian tube in scarlatina, or from foreign bodies irritating the external meatus), we very seldom hear of the brain becoming affected in this manner, although the internal ear may be so much disorganized as to produce permanent deafness.

[*Medical Gazette*, vol. xvii., p. 156, Oct. 31st, 1835.

CASES OF DISCHARGE OF PUS FROM THE EAR,

AFTER INJURIES OF THE HEAD.

To the Editor of the Medical Gazette.

SIR,—In a recent number you have inserted an account of two cases of abscess of the brain, discharging by the meatus auditorius; in one of which, a patient of Dr. Macleod's, the natural termination of the disease was shown undisturbed; while in the other, a patient of my own, the rapidity of the disease was probably somewhat accelerated by a blow upon the head. They both of them show the comparative freedom from acute inflammation, and the sloughy appearance of the abscess which these cases usually present.

Discharge of pus by the auditory meatus sometimes takes place, however, in another way—viz. when a fracture of the temporal bone has been followed by suppuration between the bone and the dura mater. The two cases which I have sent to you from my hospital note-book are examples of this accident. In the second, dissection showed the manner in which the discharge had taken place through the fracture; and the first is, I presume, an instance of the same injury, for it can hardly be supposed that, in such cases, the discharge can take place by *ulceration* through the bone, as in the more common cases which you formerly related, since it occurs at too early a period after the accident to make such ulceration probable; and every day's experience shows that fractures of the bones of the skull, attended by symptoms of concussion only, are by no means infrequent, and also, that the petrous portion of the temporal bone is a situation in which fractures are very often produced, especially where a person falls from a height upon the vertex or side of his head, so that the roof of the cavity of the tympanum, which is opened by the fracture, affords a ready exit to the pus, the membrana tympani being either ruptured at the time of the blow, or opened by ulceration at a subsequent period.

The *direction* of the fracture in the second case was obliquely from behind forwards, so that the seventh pair of nerves escaped; but in other cases of the same accident, it is across the base of the skull, implicating the sphænoid bone, and often both temporal bones at once. In such severer

injuries, extensive discharge of blood through the meatus, or between the dura mater and the bone, or into the cavity of the cranium, arises from laceration of the lateral sinus; and the hæmorrhage from the ear is accompanied by partial paralysis of the same side of the face, or by deafness, from injury to the divisions of the seventh nerve, as it lies within the temporal bone. In the first case deafness existed; but it was probably, from its temporary nature, produced by inflammation only, and not by direct injury to the nerve; and perhaps the reason why it was not occasioned in the second case, might have been from the suppuration having taken place *behind* the superior angle of the petrous bone, *i.e.*, in connection with the cerebellum, instead of the more usual situation in front of this angle, and in connection with the cerebrum; the organ of hearing being nearer to the latter situation than to the former.

I am, Sir,

Your obedient servant,

Cæsar Hawkins.

31, Half-Moon Street,
Nov. 14th, 1835.

Case I.

Injury of the Head.—Symptoms of Pressure.—Discharge from the Meatus.

James Cook, æt. 14, was admitted into St. George's Hospital, June 4th, 1830, with the following history:—About a month before his admission he fell from a first-floor window upon some loose earth, striking the right side of his head in his fall. He was stunned for ten minutes, and vomited on his recovery, and was confined to his bed three weeks with *acute pain* in the head, during which time he was bled and cupped with relief. Then he walked about apparently well for two or three days, till, on the 31st of May, he was seized with his present symptoms.

He is unable to stand without assistance, and the movements of the legs are staggering and uncertain, so that the legs cross one another, and he would fall down if not supported. He has dimness of sight, wandering of the eyes, dilated pupils, scarcely acting at all when the candle is brought near them, especially the left, which is almost entirely insensible. Severe pain in the forehead; bowels constipated; pulse 108, rather full and sharp; tongue white, but moist. Skin cold on admission, from his ride to the hospital, but soon rather hot and dry.

6th.—No flush, no heat of skin; tongue moist; pulse only 68, but with now and then a double beat, and rather thready; bowels open twice. Pupils not so sluggish, nor so dilated; the left now contracting more than the right, instead of being less influenced by light. He complains much of pain about the right ear, near the seat of the blow, but the general pain of the forehead is gone, and he thinks himself partly deaf on the right side.

7th.—Slept well, and has less pain. When taken out of bed he evidently had more power over the legs, though they still crossed one another. Pulse 68, soft and quiet; tongue clean and moist.

19th.—Discharge from the ear still copious. Bowels continue torpid. Legs stronger, and directed properly, but tottering; pupils somewhat dilated, and still sluggish.

From this time the improvement in his gait steadily continued, and the discharge from the ear lessened, and nothing of consequence was done except his taking for three or four days a grain of calomel twice a day; and on the 20th July he left the hospital quite well, walking as strongly as ever.

Case II.

Fracture of the Temporal Bone.—Suppuration in the Lateral Sinus.—Discharge from the Meatus.

Philip Burns, æt. 37, was admitted into St. George's Hospital, July 27th, 1835, soon after the following accident. While scuffling with another man, being intoxicated at the time, he fell on the floor, and struck his head against the edge of a stone step, by which a scalp wound an inch and a half long was inflicted behind the left ear, the bone beneath (the angle of the parietal, just at its junction with the occipital and temporal) being a little denuded. He was said immediately after his fall, while still on the floor, to have had some convulsions like epilepsy.

After his admission he had no symptom of injury of the head, except a little giddiness on the 30th; the wound nearly healed, and he was made an out-patient on the 5th August.

August 27th he was brought to me again, and I readmitted him into the hospital, at which time he had much irritative fever, with considerable anxiety of countenance, with a weak pulse and cold extremities, as if he had been half-starved, which, indeed, he complained of having been, the tongue being white but moist. It appeared that he had experienced much pain in the head since he left the hospital, and that yesterday considerable *purulent discharge* had taken place from the *left ear*. This still continued; and on examining the wound behind the ear, which was foul, and the edges undermined, the bone was felt exposed, and the probe passed some way into it through the intervals of the suture; and what seemed to be the end of a fissure in the temporal bone joining the suture was also felt.

29th.—Had rigour twice last night; slept badly; discharge from the ear increased.

31st.—There is now no pain in the head; pulse 80, weak; tongue inclined to have a brown fur; discharge free from the ear; has profuse perspiration following repeated rigours; looks anxious and distressed both in mind and body.

September 1st.—Less perspiration; no rigour; no pain, and he feels better. No affection of the mind nor of the muscles, except indistinctness of speech from apoplexy two years since.

3rd. The operation of trephining had been several times agitated since his admission into the hospital, but as the discharge from the ear was quite free, and the exposed bone had not the appearance of having purulent matter below it, and there was an entire absence of symptoms indicating either direct irritation or pressure upon the brain, the operation was not hitherto thought advisable by my colleagues or myself. The symptoms were not those of confined matter connected with the brain, but only of suppuration of a low kind *somewhere;* and the suppuration might, perhaps, be in the lungs or liver, or in some other situation, from secondary deposits, with as much probability as in the head. If the confined matter was situated in the head, it might be *within* the dura mater, with as much or even greater probability, than *below* the bone; as what was perhaps formed below the bone in the situation of the injury, appeared to have so ready an exit through the ear. As, however, he was evidently sinking, unless some relief could be afforded, we now thought it better to give him the chance, though small, of some pus below the injured bone not being readily discharged.

The trephine was accordingly applied in the centre of the exposed part of the parietal bone, so as to include the end of the fracture in the temporal, where it reached the suture of the three bones at their junction. The bone, however, was only dead on the surface; it bled freely during the operation, and afterwards, from a large meningeal branch, and the dura mater was perfectly healthy below.

He was, of course, not relieved by the operation. The perspiration continued, with occasional slight delirium; the tongue became brown, and rather dry. He then had drowsiness and inclination to stupor, though he was capable of answering rationally almost to his death, which occurred in the afternoon of September 6th.

On examination after death, it was found that the aperture made by the trephine included the end of the additamentum suturæ lambdoidalis, and the end of a fracture of the temporal bone, which extended from the suture to the meatus, and across the petrous portion to the junction with the sphænoid bone. The portion removed was the end of the parietal bone, just above the superior angle of the petrous portion of the temporal bone, and was consequently less than a quarter of an inch from the tentorium and the lateral sinus, where the horizontal portion of the latter turns down into the deep fossa of the temporal bone. The dura mater, where exposed by the trephine, and on the upper part of the temporal bone, was quite healthy, but below the level of the tentorium was inflamed, and coated with lymph and pus on both its surfaces. The suppuration seemed to have commenced in the

lateral sinus in the temporal fossa, as it was obliterated by coagula of blood, which adhered to its inner surface; and between it and the bone were two small ulcerated openings, while another ulceration had taken place on its internal or cerebral aspect. From this opening matter escaped, so as to cover the neighbouring part of the cerebellum to some extent. Around the external opening more lymph had been effused than around the internal, preventing the separation of the dura mater from the bone to a greater extent; and thence the matter had escaped either along the line of fracture posteriorly into the meatus, or perhaps through the fracture in the roof of the tympanum, from which cavity it made its way suddenly the day before his second admission into the hospital; ulceration having then, perhaps, taken place in the membrane.

[*Medical Gazette*, vol. xvii., p. 261.

ABSCESS OF THE BRAIN FOLLOWING A SCALP WOUND.

THE patient received a blow from a pair of tongs on the left side of the head, over the upper and posterior part of the parietal bone, and came to St. George's Hospital very drunk, with a small scalp wound denuding the bone and bleeding copiously, but could not be persuaded to stay in. He was seen twice afterwards, and on neither occasion suffered from any head symptom. It was about three weeks after the injury that he was admitted, the wound not having healed, but being not unhealthy. The man had now some staggering in his gait, though not actual palsy of the right leg, scarcely any power over the right arm, and inability to speak plainly from palsy of the tongue, and considerably impaired motion of the muscles supplied by the right portio dura. His senses were at the same time perfect; there was an entire absence of any constitutional disturbance, and the pulse was under 80.

These symptoms were almost entirely removed the next day by means of an active calomel purgative, and he went on quite well for five or six days, and got up without leave. The same symptoms then returned in an aggravated degree, and he had perfect palsy of the right leg and arm, and right side of the face and tongue; and, though quite sensible, he could not answer without unusual effort and slowness, and though the pulse was 76, soft and quiet, he had pain in the head and a loaded tongue.

Under these circumstances it was determined to give the patient the chance afforded by an operation, and an opening was made by the trephine through the exposed bone. The bone was healthy, and at first it seemed as if the operation had failed in its object, as most of the dura mater ex-

posed was also healthy; but on depressing one part, which was covered by lymph, about three ounces of very fœtid pus was evacuated. Two more crowns of the trephine were then removed, which exposed the apparent extent of the diseased dura mater, in the centre of which was a small sloughy opening through which the pus had come, as if from the substance of the brain.

There was a trifling amendment, but no effectual relief, nor did much matter escape on the succeeding days; so that with some healthy brain projecting into the opening in the dura mater, it rather seemed as if the pus had come from the cavity of the arachnoid, and therefore nothing further was done. The man died about six days afterwards, with gradual oppression of the mental powers, and increased palsy of the body, with some twitching of the muscles. He had survived the injury about five weeks.

On examination the dura mater everywhere adhered to the calvarium; on turning back the dura mater it was found quite healthy and free from inflammation, except close to the sloughy opening, where a little foul lymph was formed. The right or opposite side of the cerebrum was healthy, except that the convolutions were somewhat flattened by the pressure of the left or diseased hemisphere, in which was found a circumscribed abscess which occupied a considerable space, and reached down to the wall of the lateral ventricle, which it had very nearly perforated. Around the abscess the cerebral substance was of a light yellow colour, and softened by inflammation, which extended through the whole of the hemisphere, and the grey substance for some distance round the orifice of the abscess was also altered in colour and appearance. The lateral ventricle contained some clear fluid, and the septum lucidum was softened. The specimen exhibited, in two sections, the entire abscess, in its emptied condition.

The case was interesting in reference to the symptoms, especially the entire absence of any signs of the formation of matter, there being no rigour nor perspiration, and the pulse never exceeding 70 to 80, except for a few hours after the evacuation of the matter, when it reached 100, but afterwards again fell to 80. The entire removal of the hemiplegia for several days, with the perfect consciousness of the patient to a late period after the operation, were also remarkable. The operation had fortunately succeeded in its main object of finding and evacuating the matter.

The case was deserving of attention, also, with reference to the formation of a circumscribed abscess in the cerebral substance, after an injury of the head, not producing any immediate symptoms. However common chronic abscesses might be many weeks or months after such an injury, the immediate or acute formation of pus was almost invariably from the membranes, rather than in the substance of the brain, unless the cerebral substance itself was torn, in which case, if matter formed, it was joined with purulent

deposit on the membrane. Mr. Hawkins did not remember having seen more than one other case of circumscribed abscess, of any size, by itself. In that instance the abscess occupied almost the whole hemisphere, but was also accompanied by a fissure in the skull at a distance from it; and it was a curious point, in a practical view, that in both instances the cases had been entirely left to nature till the fatal symptoms commenced.

[*Trans. of Pathological Society*, vol. i., p. 181, Jan. 17, 1848.

Two Cases of Fracture of the Temporal Bone, with injury to the Brain, attended with Hæmorrhage and Serous Discharge from the Ear.

In the first case, a man of middle age was admitted into St. George's Hospital, after having fallen, as it was supposed, from his horse. There was some ecchymosis of the right eye-lids, without evidence of any blow on the part; the patient could at first just mention his name, but soon became incapable of answering any question, though he muttered some unintelligible words, and struggled to cover himself with the bed-clothes, if he were disturbed; he passed his water and motions unconsciously, but was sensible to touch, and moved all his limbs instinctively; he had no palsy of the face, and the muscles of the arms—especially the left—were in a permanent state of spasm, when not otherwise called into action; the pulse was under 60, and laboured; the respiration partially stertorous, and the pupils of both eyes contracted, and insensible to light.

There was, from these symptoms, evident laceration of the brain, not so deep as the corpora striata or thalami, as there was not any paralysis; there was also internal hæmorrhage, causing moderate compression, and probably a fracture of the base of the skull, not across the tympanum, as there was no blood or other discharge from the ear, but perhaps anterior to the petrous portion, so as to allow blood to be effused into the orbit and eye-lids.

To prevent further hæmorrhage, he was bled from the arm, which improved the breathing for a time, but the symptoms of irritation and compression continued. On the third day, some ptosis of the right eye-lid was observed; he became very restless, and was with difficulty kept in bed; then he became more quiet, and died on the 7th March, nearly sixty hours after the injury.

On removing the integuments, great ecchymosis was found in the substance of the right temporal muscle, arising from a fracture of the right temporal fossa. On removing the calvaria, a good deal of blood was found between the dura mater and the bone on the right side, and a clot of considerable size

was found within the dura mater, covering the middle of the cerebrum, and extending towards the base of the brain, where there was a good deal—perhaps two or three ounces—of blood. The bottoms of both middle lobes were lacerated to the depth of an inch, and softened for some distance, and there were very many small bruises and spots of extravasated blood in each lobe of both hemispheres, the largest of which was at the upper and back part of the posterior lobe of the left side, which was bruised to the depth of about a quarter of an inch. From the anterior inferior angle of the right parietal bone, a fracture passed downwards and forwards across the sphænoid fissure, and thence through the lesser wing of the sphænoid bone and body of that bone to the horizontal plate of the æthmoid bone; an additional small fracture passed backwards from this part to the sella turcica. Some blood was found in the orbit, but not among the muscles, and the extravasation in the eye-lids had proceeded from some blood passing from the temporal muscle, over the edge of the orbit.

The points of interest were, that the fracture of the temporal bone had ruptured a large branch of the middle meningeal artery, the blood not being extravasated between the bone and dura mater only, as is sometimes the case, or making its way through the ear, as is also sometimes seen, but having chiefly escaped through a rent of the dura mater, about half an inch long, into the cavity of the arachnoid.

A second point exhibited was some coagulated blood within the sheath of the optic nerve, showing how dilated pupil may sometimes be produced on one side from this local effusion, though in this particular instance its effects were not observed, as both pupils were in a contracted state, corresponding with the spasmodic condition of the muscles of the limbs, and depending like that on the lacerated state of the hemispheres.

In the second case, a man, forty years of age, while standing in an area, was supposed to have fallen on the back of his head on the stone pavement. He remembered nothing of the cause of his falling, but as he had had a fit of some kind six years before, and a second three years ago, it was believed that he had been attacked with a similar seizure a third time. He was not observed for an hour, and remained insensible for five hours on Saturday week, the day of the accident; he was bled on the following day, and blistered on the next, and was admitted into St. George's Hospital on the Wednesday following, at which time he was perfectly sensible, complaining of much pain across the middle of his head, his countenance having an expression of distress, and he moved with slowness and tremor, and had a free discharge of transparent serum, tinged with blood, from his left ear, with a small scalp-wound on the top of the occipital bone. It was clear that there was a fracture of the left temporal bone, but there were no symptoms, as in the former case, showing whether the brain was injured, further than

by the first concussion ; there was only apparent a certain amount of inflammation of the brain, not of an acute character, however, as the pulse was soft and only 60, and the tongue was moist, and the skin cool, and the colour of the circulation in the face was rather dark.

These symptoms did not seem to warrant much depletion, but he had a dozen leeches, and was cupped on the following day, and was put on the use of calomel, at first with antimony, and subsequently, when he became more restless, with small quantities of opium ; some relief was felt from this, but effusion was not prevented ; he became, therefore, more restless and sleepless, and then partly delirious ; on Friday he had convulsive twitchings of the face and shoulders, and at night became insensible ; on Saturday his pulse quickened, a copious perspiration came on, and he died on the ninth day from the accident, early on March 14th.

The cavity of the arachnoid, on the right side, contained much turbid serum, with masses of recent yellow lymph, which could be lifted up with the forceps, and the whole upper surface of the hemisphere was covered with opaque lymph beneath this membrane among the folds of the convolutions ; on the left side, the subarachnoidean cellular tissue was equally covered with opaque lymph, but no lymph was found in the cavity of the arachnoid membrane. At the base of the brain a good deal of the same thick lymph was found in the subarachnoidean tissue about the pons Varolii and medulla oblongata, the optic nerves, and other inequalities, but not on the under surface of the central lobes. Both lobes of the cerebellum were bruised—especially the right—to the depth of a third of an inch with a thin layer of ecchymosis ; the middle central lobes were superficially ecchymosed and bruised, and the under surface of the right anterior lobe was rather deeply torn. Just below where the scalp-wound was situated, a fracture began and extended from the occipito-parietal suture, on the right side, into the occipital foramen, a fragment of bone being there quite loose ; another fracture commenced on the left side of the same foramen, and passed outwards to the temporal bone.

This case was especially interesting in reference to the copious discharge of serum, amounting to several ounces in the twenty-four hours, and continuing in the same quantity during the whole of the eight days that the patient survived, dropping continuously from the ear, but much increased in rapidity if he talked or moved ; it was for the first two days after his admission tinged with red blood, and contained many recent blood-globules ; on the day before he died it was slightly yellower, and the day of his death it was quite clear ; and, although slightly yellow on the day before he died, it never contained any pus, as is often seen in such cases.

It is well known that such a discharge has given rise to some difference of opinion, the cavities of the labyrinth, or the serum of the venous sinuses

having by some been supposed to be the source of the fluid, but the observations of M. Robert, and his experiments on living animals, have fully shown that it is the secretion of the arachnoid membrane discharged through a fracture of the temporal bone with laceration of the membrana tympani. Its passage outwards is easily understood, if the thin dura mater covering the roof of the tympanum be torn by the fracture, but in this particular case the dura mater was perfectly uninjured at this part, and, therefore, a careful dissection made by Mr. Hewett, of the exact course of the fracture of the temporal bone was very valuable, as showing that the course of the nerves at the bottom of the meatus auditorius internus was the part where the dura mater had been injured, so as to afford an exit for the escape of the serum of the cranial cavity. The exact course of the fracture from the left side of the foramen magnum, skirted the inner opening of the posterior condyloid foramen at the distance of about two lines from its outer margin ; then passing across the lower portion of the groove for the inferior petrosal sinus, and slightly wounding the lining of the sinus, a clot of blood being left in the rent ; the fracture then passed across the posterior surface of the petrous part, about half an inch to the outer side of the internal auditory foramen, crossing the superior petrosal sinus, without wounding its parietes ; it descended first forwards for about half an inch, and a little internal to the eminence of the superior semicircular canal, and then passed abruptly inwards and forwards along the outer boundary of the depression for the carotid artery ; it was then traced to the under surface of the petrous portion into the posterior part of the glenoid cavity, close to, but not into the Glasserian fissure, turning so as to include an oval portion of bone. Corresponding with this line of fracture, the anterior wall of the commencement of the internal jugular vein just below the bony exit was lacerated to the extent of about a quarter of. an inch with a small coagulum in it. On separating the edges of the fracture of the petrous portion into the tympanum, a small coagulum was seen just where the nerve passed from the auditory foramen, and where the fracture communicated with the cavity of the arachnoid in the bottom of the foramen. The membrana tympani was lacerated in two places, so as to afford an external exit for the fluid, after it had passed through the fracture.

[*Trans. of Pathological Society*, vol. iii., p. 232, March 16, 1852.

CLINICAL LECTURE,

Delivered at St. George's Hospital.

Caries and Necrosis of the Parietal Bone; Epilepsy.—Caries of the Temporal Bone; Abscess of Brain; Hæmorrhage, &c.

It is the province of your systematic course of lectures to teach you the general principles of surgery, while in clinical lectures these principles are shown you more in detail; and in to-day's lecture I propose to explain to you something of the subject of inflammation of the bones of certain parts of the body.

You have learned, regarding this texture, that in healthy inflammation the inflammatory secretions are organized in the form of hard periosteal or osseous nodes, while in unhealthy inflammation there are formed soft nodes, containing a glairy transparent fluid, or pus. You know that caries is analogous to unhealthy ulceration in the soft parts,—it may be weak or phagedænic, strumous or syphilitic,—and, finally, that with or without caries there may be the death of the inflamed parts, which exfoliate, or separate in larger pieces, constituting necrosis.

You are familiar with the subject of caries, as it is seen in the cancellous structure of the carpus or tarsus, or in the heads of the long bones, whence the joints so often become diseased, and also as you witness it in the disease of the spinal column; but there are some parts in which caries and necrosis are more rare, and of much importance, and in no part of greater interest than in the bones of the cranium, which I will first bring under your notice in two cases now in the hospital.

The first case for our consideration is that of Elizabeth M——, aged 51, admitted November 13th, who tells us that last May twelvemonth she began to suffer from violent pain in the right temple, whence it extended to the top of the head on the same side, and that she had previously been labouring, as she called it, under debility, without apparent cause. About a month afterwards, she perceived a swelling near the seat of pain, which was opened at the Chelsea Dispensary in the following October, and some thin fluid escaped, the pain being then relieved. Last May she had a fit of epilepsy, and has continued to have fits ever since, and that more frequently in the last two or three months, the fits occurring at intervals of about a fortnight, and lasting from a few minutes to nearly half-an-hour, but without the convulsions being very severe; and they are unattended with much stupor. She has nearly lost the use of the left or opposite arm to the seat of disease, and says she had some numbness in it previous to the first fit; but on examination, it appeared that there is no palsy of the limb, but that the hand and wrist are stiff and useless from inflammation—perhaps rheumatic—in the carpal joints. She suffered much from a cough, but says she has had it for

twenty years; she is thin and emaciated, with a feeble and rapid pulse, without fever, and not much pain in the head. Two ulcers in the scalp led down to the same part of bone, the upper and anterior border of the right parietal, a narrow bridle of skin separating them; the bone was dead, and had a thin, black, and very fœtid discharge from around it.

I requested Dr. Nairne to see her at first for her cough, which slowly improved. but has never left her, and appears to be only bronchitis, though her aspect is a very suspicious one.

On the 18th, five days after her admission, she had a slight fit, and I divided the band of skin across, which it is always right to do in cases of necrosis of the cranium; it takes away some tension, and so far relieves irritation, and by dividing this band you also save some skin to fill up the hole, for it is sure to be ulcerated away if left, and when divided the two ends retract to a certain degree, and are preserved.

Dec. 6th.—She had another fit, her cough being now less, and her health a little better. On the 17th, finding the bone apparently loose, I removed it; it was worm-eaten on the outside and smooth on the inside, where it had been attached to the dura mater, and was about an inch long, and as broad as the end of the forefinger. I did this, you may remember, with great gentleness, inserting the end of an elevator under one side and another under the other, moving them alternately and slightly, lest the edge of bone should be tilted in upon the dura mater; and yet you may have learned a lesson of caution in the case as to meddling with dead bone of the head whenever force is required; for our notes of the next day remark that she had two fits on the evening of the day in which the bone was taken out—one at seven o'clock, the other at ten—partly, no doubt, from a little fright, but in part also probably from the operation, slight as it seemed, for she also suffered from pain in the head.

On the 20th she was perfectly quiet, the pulse natural, and the dura mater granulating healthily.

Jan. 6th.—She again had two slight fits. But why, you may ask, should this take place after the removal of the dead bone? The cause was evident on looking to the exposed dura mater; for a little yellow, unhealthy ulcer appeared in the middle of it, the size of a small pea. It got well again under the use of solution of caustic, and by giving a little wine, with sarsaparilla and iodide of potassium, her health also improved, and she was able to get up from her bed.

At the end of the month she was weakened by an attack of diarrhœa, and from this cause on the 30th she again had a fit, and a similar spot of ulceration was observed, whilst the rest was cicatrizing, the new skin passing from the scalp downwards over the surface of the dura mater. Now it is again more healthy.

In such cases as these, then, the danger arises from the effects on the brain, and hence they are most frequently seen under the physician's care, unless some injury has been known to have been the cause, or the bone requires surgical attendance, as in M——.

Sometimes there is pretty acute inflammation of the brain. A man, for example, was admitted under the physician some years ago, who had been ill with pain in the head for eight months, and three times he had had epilepsy, and for a week before I saw him he had been nearly in a state of coma. It then appeared that his attack followed a blow on the head, and I was asked to attend him; he was insensible, with dilated pupils, and a perfectly passive state of his limbs, and his pulse was under 50. Finding some little swelling over the right parietal bone, I made an incision down to the bone, which had the effect of rousing him to look up, though not to answer questions. I bled him, and administered calomel, and in a few days he was much better. He had one relapse, though not to the extent of becoming comatose, and bleeding and calomel again restored him. A fortnight after this he again became ill, but it was with delirium and half mania, for which three or four grains of morphia were given daily, and in a short time he got well, and continued so a year afterwards.

More often, however, the inflammation of the bone is of a chronic character, and the symptoms of cerebral affections are those of irritation or congestion rather than of inflammation. The effect of the bone itself is seen in this cranium,which is covered with small ulcerated depressions inside and out, over its whole extent, some parts having apertures through the bone; it is probably the result of syphilis. In this cranium again a nearly similar condition has been produced by a blow, and an attempt was made by the surgeon to relieve the symptoms by an incision at one part, but matter was found after death below the bone at another part. You cannot wonder that operations are of little avail in such cases as these, where hardly a portion of all the cranium is unaffected. But at the same time, the fatal effects of confined matter are seldom seen, especially if any of the bone dies, for little perforations generally take place in different places around it, through which the pus within the bone escapes, and in which you may see it rising at every pulsation of the arteries of the brain, or at every cough or deep expiration. In strumous cases you may see the caries in circular spots, as in this cranium, which was taken from a patient of mine, who died of disease of the hip-joint; the deposit was in complete tubercles both on the inside and the outside; one or two were even in the sphenoid bone, radiated depressions marking where the tubercular matter had been deposited.

The symptoms of inflammation of the cranium may be entirely local and external; or they may influence the nerves in their passage through the bone

without any cerebral affection ; or, thirdly, the brain may be affected with or without local pressure on the nerves in their course.

A child, about ten years old, was admitted into the hospital under my care, with an immense collection of pus without any pain, in contact with the bone or pericranium over the whole head, completely distending the occipito-frontalis muscle from the occipital ridge to the forehead, and from one ear to the other, which was the consequence of a fall some time before. I made a small opening on one side, and pressed the matter gently from all parts to this opening, and used a bandage afterwards to keep the parts in contact. The case was sufficiently healthy to have adhesion take place very shortly, and no part whatever of the bone exfoliated, except a very small piece just under the lancet puncture. Frequently you may find the probe touch the surface of the bone for several inches, and yet if you do not expose it more than you can help, the pericranium will again come in contact with and adhere to the bone, without any exfoliation.

In the next place, as to the effect upon the nerves alone : a man was in the hospital with chronic disease of the sphenoid and temporal bones, without any cerebral affection, in whom complete loss of sensation and of motion on one side of the face marked the affection of the fifth and seventh nerves, while some ulceration of the Schneiderian membrane, and of the conjunctiva, showed the effects of loss of sensibility in the delicate surfaces. I remember a man, whom I saw many years ago in the Middlesex Hospital, in whom all the first seven nerves of one side of the head were affected by syphilitic inflammation of the bones; he had neither smell, nor sight, nor taste, nor hearing, nor feeling in any part whatever of the left side, while these senses were perfect in the other half ; the eye was immovable and fixed from palsy of the third, fourth, and sixth nerves ; and the whole face and the muscles of the lower jaw were paralyzed, and the face œdematous ; the eighth and ninth nerves alone were unaffected, the cerebral functions having up to that time been unimpaired.

Generally, however, the brain becomes affected at some time or other,—sometimes only producing epilepsy, as in M—— ; but often the mental functions are weakened ; there is general torpor of mind and body ; the memory fails, and the speech is imperfect ; or complete coma indicates more complete compression by temporary congestion, or permanent and fatal pressure.

A woman, who probably had chronic inflammation from syphilis, was under my care, having a curiously misshapen head, from lymph and serum in the front of the right side of the head, and in the back part of the left. One day she was suddenly attacked with insensibility and paralysis of the left side of her body and face, and loss of sight, for a time, in both eyes, and of

hearing in both ears. She was very near dying in this attack, but recovered from it, and went out well, except having nearly complete deafness of both ears still remaining.

A Jew dentist was under my care, more or less for about eight years, who had a small hole in the palate, and a carious spot in one clavicle, from a node; he had once some discharge from the ear, with palsy of the portio dura, and deafness of that side permanently. When I first saw him he was suffering from incessant sickness, which had on several occasions, in the previous year and a half, lasted for two or three weeks at a time, and had been treated as dyspeptic. His friends were much astonished when I ordered a bladder of ice to be applied to his head, which, however, relieved the vomiting, for it was a cerebral symptom, accompanied by much pain of the head, arising from chronic inflammation of the cranium, not only of one temporal bone, but of many other parts of the skull, both within and on its outer surface, in which, after death, roughness and depressions marked where the disease had been, with thickness of the bones and of the dura mater. In the course of his illness he had at one time partial loss of power over the lower limbs and bladder, but not of long duration; and becoming reduced in circumstances, he finally died in this hospital of abscess in the hip-joint, which lasted about six months. There had been no disease going on in the head for a considerable time before he died.

I have already mentioned something of the treatment of the more acute form of disease; but venesection and mercury, to affect the system, are of course not to be thought of, for chronic cases, as far as the bone itself is concerned, particularly when caries and necrosis are present; nor is it often that even cerebral symptoms require such active measures. Far more often, cupping or a few leeches, afford all the depletion that is requisite; and blisters to the nape of the neck, or now and then a seton, are more frequently required than any loss of blood at all. The treatment is, on the whole, not unsatisfactory, if the affection is tolerably limited in extent; and iodide of potassium, with bark or sarsaparilla, offers you the most efficacious remedy, whether the case be syphilitic or not in adults, for the original cause is not of much importance, a state of cachexia being present in all, otherwise the disease would not exist. Sometimes, however, a few grains of Plummer's pill may be added to, or substituted for, the iodide; and sometimes small doses of bichloride of mercury are of service, with a tonic, as an alterative, taking care not to salivate the patient. When nodes are present, the firmer they are in texture, the more likely is a mercurial to be useful; and it is scarcely ever desirable when soft nodes are formed, or the suppuration is accompanied by caries. If much irritation is present, moderate doses of opiates are of service, and this remedy, with blisters, is to precede the use of iodide or tonics, if the pulse is quick and irritable, with flushing of face

and exeitement of the nervous system. The diet is of eourse to aecord with either of these different states ; and complete rest in the horizontal posture, with the head raised, or going out in the air as mueh as possible, may each be necessary at different times in the same case. I am not now speaking of serofulous earies which oeeurs in young persons for the most part, for whom eod-liver oil, steel, air, and good living, are far the most appropriate treatment.

Your loeal measures must vary aeeording to the state of the parts. Suppose there are hard periosteal nodes in the inflamed bone ; you may have the part shaved, and apply blisters, if the eonstitutional treatment does not eheck their increase ; and if the pain is very great, an ineision gives very great relief, but is seldom required. If there are soft nodes of moderate extent you need do little loeally ; it is surprising how quickly several apparent abseesses will have the fluid absorbed, and the perieranium again fixed to the bone, in a few days after you have given iodide of potassium, with some tonie, espeeially if there is a syphilitie poison still in the system : so also will some serofulous nodes, if the eheesy matter is not very abundant. If the fluid is slow in being absorbed, you may often hasten the eure by the loeal application of iodine and iodide of potassium lotion, painted over the swelling, or hydroehlorate of ammonia lotion. Do not open the colleetion of fluid hastily, for, if exposed, the inflamed or earious bone will die. If, however, the fluid is rapidly formed, it will separate the perieranium from the bone to a great extent, whieh you ean avoid by removing the tension by means of a small puncture, whieh you allow to heal again. If, again, the swelling is tense, and the skin is beginning to redden, a similar small puncture takes away irritation, while your medicine is aeting on the system. If, however, the proportion of pus to the glairy fluid seereted under inflamed periosteum is considerable, you eannot avoid a permanent opening as long as the bone remains diseased.

The separation of dead bone in the eranium is generally a slow process, and you eannot do much to hasten it. It is, as we have seen, not often that the pus seereted by the dura mater is eonfined, but if symptoms indieate sueh an oeeurrenee, it would of eourse be right to employ the trephine. It is astonishing to see how little irritation of the brain is exeited by very large pieees of dead bone, even when almost the whole frontal and both parietal bones are dead, as I have myself seen, and that for many years together.

I have already spoken of the eaution to be observed in forcibly removing the neerosed bones, the effect of whieh you can understand, from seeing how little interferenee oeeasioned some irritation in M——, although the bone was so small. But in some eases, you can do mueh good by dividing the dead bone by a eutting forceps, or Hey's saw, or eutting off any edge of bone by whieh it is imprisoned. A woman was in the same ward as this patient,

whose arm I was obliged to amputate on account of disease of the elbow; she also had necrosis of two-thirds of the frontal bone, and four years afterwards, the dead bone appearing insulated, though quite fixed by its irregularities, I got a bone forceps between it and the dura mater and divided it across. I remember it was so hard that one piece flew off over one or two adjoining beds when it was divided; probably some years' inconvenience was thus saved. I have only one more remark to make at present —namely, that the dura mater is thickened in these cases of chronic inflammation, so that there is no fear of hernia cerebri from its exposure as in cases of recent injury.

M—— has since left the hospital, with very little tendency to epilepsy, for several weeks.

One of the cranial bones, the temporal bone, requires some separate consideration, as it is very often attacked by caries, which is occasioned in many instances by inflammation of the lining membrane of the meatus and tympanum, to which these parts are peculiarly liable from contact with the atmospheric air.

Of this you have an example in the case of William W——, æt. 23, in Winchester ward, who was admitted February 5th. It seems that he has been subject from his childhood to some purulent discharge from the right ear, varying in amount, but never absent entirely. Three years ago, an abscess formed, which burst into the meatus, having been situated probably beneath the mucous membrane only, for such abscesses are very common in these cases of chronic inflammation, as you might expect. A week ago he perceived a swelling behind the ear, which extended upwards and downwards to some distance, giving him much pain, so that he could not sleep at night, till some morphia was given him after his admission. He is a pale, thin, consumptive-looking young man, but has no cough, and has had no fits or cerebral affection, and is quite deaf on the affected side, except to the ticking of a watch held close to the ear.

The abscess was punctured by the house-surgeon the next day, and when I saw him on the following day, I enlarged the orifice, as the pus, which was very foul and offensive, did not readily escape. The bone was felt exposed, and the probe passed deeply into the ear, and probably into the tympanum, but I did not examine the ear minutely, for fear of irritating it.

Here, then, you have a good deal of suppuration, separating the auditory tube from the bone, which is itself diseased, if not dead at some part. He was directly relieved from much suffering, and already, in four days, there is hardly any discharge from the abscess behind the ear, and the periosteum being now allowed to come in contact with the bone, will again adhere to

the part which is not diseased, though separated from it by the pressure of the pus.

The inflammation he has so long been subject to is of a scrofulous nature, as you would suppose from his appearance. The discharge, in such cases, is partly purulent, partly ceruminous and epithelial, while the bone is unaffected, and is exceedingly offensive in many cases; and in scrofulous families when no other symptom is present, you will often see parents and children, alike complaining from time to time of ear-ache, and abscess, or discharge. I know an instance in which a lady died of abscess of the brain connected with the ear, and no less than seven of her children have had discharge from the ears, the membrani tympani being perforated by ulcerations in, I think, four of them, and in one, very alarming cerebral symptoms have been sometimes present.

The disease is to be checked and cured chiefly by internal remedies,—cod-liver oil, steel, and such remedies more particularly. You should, if there is much discharge, inject warm water very gently, daily, or on alternate days, as the thick secretions lodging in the ear are themselves irritating to the surface. Do it very cautiously, however, for intense pain for several hours may easily be excited by using any force with the syringe. I do not feel the same fears which some persons entertain, from endeavouring to check the discharge, while it is perfectly free from acute symptoms, and while your alterative and tonic medicines are exerting a beneficial influence on the system. Doubtless you may see alarming or fatal symptoms succeed the sudden stoppage of the discharge, and astringents improperly used may do harm; but in many cases, where blame is attributed to mild injections, a diminished suppuration is the consequence and not the cause of internal mischief, just as a wound of the scalp dries up, if suppuration takes place below the cranium. A solution of a grain of sulphate of zinc to an ounce of water may be dropped into the ear, or two grains of lunar caustic, with much advantage, when the internal ear is not affected, or the inflammation active.

What the ultimate result of so long continued a disease may be in reference to our patient, it is impossible to say; but looking to his apparent constitution, it may easily terminate as in this preparation on the table.

In this case, the patient, 27 years of age, nearly the same as in W——, was admitted under my care on February 26th, a few years ago, with purulent discharge from the right ear, deafness, pain in the head, and other symptoms of inflammation of the brain, of moderate severity, which commenced six months previously. The discharge became in March very copious and fœtid, and mixed with blood, both from the ear and Eustachian tube, and at the end of the month there was some oppression of the brain, with local paralysis of the muscles supplied by the right portio dura. In

April the malleus and stapes came away entire, and on June 7th, copious hæmorrhage from the ear was the immediate cause of his death, phthisical symptoms having in the meantime much reduced his strength.

You may see the upper surface of the right temporal bone carious and cribriform; it was dark coloured, and the dura mater was adherent to it, inflamed and sloughy, and in part absorbed. Just above this the under surface of the cerebrum was sloughy, and the cerebral substance around softened, with a small quantity of foul pus. On the posterior surface of the petrous portion was a small quantity of ivory deposit. The groove for the lateral sinus was partially carious, and the sinus at that part was inflamed, and almost sloughy, but without any opening in its coats. Around the carotid artery, where it ascends by the side of the sella turcica, was a small quantity of effused blood, but whence it had proceeded could not be ascertained. The bony floor of the meatus and tympanum was absorbed, and there was a large quantity of foul bloody matter in the cavity which was thus formed, which communicated with the joint of the lower jaw, the condyle of which was almost wholly absorbed. The lungs were filled with tubercles, some forming abscesses, and there was recent lymph in the mediastinum, and old adhesions of the pleura. The peritonæum was also studded with tubercles, and the intestines adhered together. The state of the lateral sinus shows you the danger of absorption of matter, and formation of secondary abscesses, and in another preparation on the table you may see the sinus completely obliterated by inflammation.

Some gentlemen present may perhaps remember the case from which this preparation was taken, a patient of Mr. Tatum, September 6th, 1848, æt. 16, in whom inflammation had begun two months previously, which soon produced deafness, for which the membrana tympani had been twice punctured without relief. The portio dura became affected, and numerous abscesses formed, having dead bone exposed in them in the situation of the mastoid process. She became very weak and restless, and on January 11th, had a fit, followed by delirium, altered voice, and dilated pupil, and she died on the 19th.

The caries is the most extensive I have ever seen, affecting the squamous, mastoid, and petrous portions of the temporal bone. The anterior portion of the mastoid process is quite destroyed, as also were the styloid, vaginal, and auditory processes of this bone; no trace of the stylo-mastoid foramen could be observed; the ulceration did not encroach on the occipital bone; that portion of the mastoid element which forms the floor of the lateral sinus was ulcerated to the extent of an inch in length and three-quarters of an inch in breadth, the sinus itself being almost impervious from effusion of lymph into its cavity. Nearly the whole of the base of the petrous portion was destroyed, and the cavity of the tympanum laid open. The back part of the glenoid

cavity, the commencement of the zygomatic process, and the lower part of the squamous portion, were also very extensively ulcerated. The dura mater covering the bone was very vascular; the right middle lobe of the brain was more vascular, and softer than natural; lymph was found in the cavity of the arachnoid, and in the subarachnoid areolar tissue at the base of the brain.

Observe how rapid the progress of this remarkable case was as compared with our patient W——, and notice the recent characters of the cerebral inflammation, and contrast what I have just read with the appearance of the cyst of this large abscess of the brain, the size of an apple, which communicated with the tympanum, in a boy eight years of age, the thickness of which shows you that it must have been long formed, being firm and tough, and lined with a blackish sloughy membrane; it followed discharge from the ear of several years' duration, and you may examine the carious condition of the bone corresponding to it in the Museum.

You may find many such cases as these in Dr. Abercromby's work, or Dr. Bright's, and in other medical writings, and in some of these cases perhaps a chronic abscess in the brain may have itself caused perforation and caries of the temporal bone in trying to make its way outwards; but in almost all the ear is first affected, and the brain secondarily. Where such a complication as this exists, the patient is necessarily exposed to sudden danger from any injury or impairment of the health, and a fatal result rapidly follows the previously chronic form of disease.

For example, a man was admitted many years ago under my care, three weeks after a blow, which he received by knocking his own head against a door while endeavouring to strike another man, with whom he was quarrelling. This was followed by intense pain over the head and delirium, in which he made several attempts to destroy himself. He died three days after his admission, having become comatose a few hours before his death. A large sloughy abscess occupied the anterior and middle lobes of the brain, communicating with the carious openings into the tympanum, which you may here see. He had, as in the other cases I have related, been subject for several years to discharge from one ear, which occasionally ceased, and when stopped he became very deaf. Doubtless, the abscess had existed for some time, and discharged itself through the bone, but was suddenly inflamed by the blow, and made quite gangrenous on its inner surface.

[*Lancet*, May 17th, 1851.

CLINICAL REMARKS.

1. *Exfoliation and Caries of the Bones of the Cranium.* 2. *Scrofulous Tubercles of Cranium.* 3. *Loss of Bone by Absorption.*

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In the case of Quin, you will probably have an opportunity of witnessing the very interesting process of the healing of exposed bone without exfoliation; the granulations of the edges of the skin around daily spread over the circumference of the bone; you saw yesterday two or three holes through it, with granulations springing up; and several red spots were seen elsewhere, which were vessels shining through the thin outer layer, in each of which spots, perhaps, a granulation is arising to-day; and these will gradually increase, till they unite with each other and with those of the outer circle; and more bone is seen or felt, and the surface finally becomes covered with new skin. These granulations are formed by the enlarged blood-vessels in the osseous canals, by which, at the same time, the ossific materials are absorbed and melted down, which is quite an appropriate expression, according to Mr. Bransby Cooper's observation of the pus under these circumstances, as it contains some 2½ per cent. of phosphate of lime, while there is hardly a trace of it in ordinary pus.

The same process sometimes goes on in other bones, of which you can see an example in Jane Redman, aged 46, admitted December 28. She has had swellings on the legs for about five years, arising from inflammation of the tibiæ, as well as chronic disease of the cellular tissue, which arose from kicks given to her by her husband; and, from the number of cicatrices of ulcers, it is not improbable that she has been indebted to her affectionate partner for syphilitic disease also. The right leg begun to ulcerate over the bone a few months ago, and the left leg subsequently. On the right leg there are several cachetic ulcers, and the tibia is exposed largely by them in two or three places. The state of her system is shown by the unhealthy, sloughy ulcers, which have been produced within these few days by her having slightly rubbed some parts of the skin against the cradle covering the legs. In consequence of these, I have put her on the use of sarsaparilla and iodide of potassium, which will be of service also to the inflamed tibiæ, the exposed surfaces of which you may see becoming gradually covered over by granulations, with apparently no exfoliations, though she is not so secure, as to this point, as Quin seems to be.

It is of more interest, however, to observe the process in the exposed cranial bones, on account of their relation to the important organ within them; because, as you are aware, the vessels of the dura mater are liable to separate from the same extent of the inner surface, whence matter forms, with fatal effects upon the brain or circulation; and, that, moreover, even

at a greater depth, as in this preparation of a small abscess, situated, immediately beneath the arachnoid membrane and pia mater, extending about an inch deep in the convolutions, though narrow in other directions, which formed in a woman who died in the Middlesex Hospital, after the bone had been denuded by a burn immediately over the abscess.

Very many, however, escape mischief, and recover without any exfoliation or very trifling exfoliation, and sometimes under circumstances of a very unpromising character. Of this you have had an instance in Elizabeth Dobinson, 64 years old, as she calls herself, but 75 according to her daughter's statement, who was admitted on the 2nd of last month. She had been subject to fits for the last twenty years, and on that day, in one of these epileptic seizures, she fell into the fire, striking her head against the bars of the grate, and inflicting a small scalp-wound. The left side of her head and face were much burned, the eyes closed from œdema, and several parts of the skin of these parts, as well as on her hand, destroyed ; yet notwithstanding her age and state of half imbecility of mind, and her epilepsy from the previous state of the brain, a portion of bone exposed by the separation of the last slough on the 23rd of December, has since become quite covered over, and is healing ; and one or two fits she has had since her admission have not been more severe than before the accident.

I have placed on the table this calvarium, taken from a patient who was under the care of one of my colleagues some years ago, for a severe burn on the neck and shoulders, succeeded by erysipelas of the scalp and subjacent tissues, for which incisions were made ; but on the separation of the sloughs, the skin also sloughed, and the bone was entirely exposed within the space marked on the surface, which includes a large portion of both parietal and of the frontal and occipital bones. She died exhausted ; but, even with this enormous exposure, some days before her death, there were no head symptoms ; the dura mater was supplied with blood, and was adherent to the inner surface of the bone, and the brain was healthy.

There is probably more danger of purulent collections forming below the bones of the skull in recent injuries, than there is in cases of disease ; and if suppuration does take place, in some cases of disease, such as caries and necrosis, there is also less risk to the patient, because perforations through the bone accompany these affections, through which the pus can escape ; and you can see it rising and falling in these apertures, according to the pulsations of the vessels of the brain, and according to the state of inspiration or expiration which fills or empties the veins of that organ ; and, at the same time, when bone comes away, the thickening of the dura mater resulting from the chronic disease affords protection to the brain, and prevents the hernia cerebri, which follows exposure of the dura mater in many recent injuries. Thus many years may pass, during which the disease lasts, and yet

there is no affection of the cerebral functions, and little deterioration of the health.

In some cases, however, notwithstanding these numerous perforations of the skull, the matter formed below the bone does not escape freely, and a fatal result follows. In this preparation, there appears to have been syphilitic caries of many parts of the cranium, both tables of the bones being affected, and in some places the whole thickness is affected, and you may see several apertures through the skull. It would appear, however, that the surgeon had tried to obviate the effects of confined pus by the application of the trephine in two adjacent places. The history is, however, unknown.

In the patient from whom the next calvarium was taken, the caries was of a scrofulous character. She had been suffering for some time from pain in the head; and, the pericranium over one of the parietal bones being perceptibly thickened, an incision was made in this situation down to the bone. This relieved the pain in the head, from which, however, she was not quite free. Some time after the operation, she again complained of severe pain, extending over the whole of the head; but, as there was no perceptible tumefaction or tenderness, no operation was performed. On examination after death, extensive suppuration was found between the bone and dura mater. This membrane was very much thickened in the situation of the matter. Numerous vomicæ and tubercles were found in the lungs. The caries is seen to affect a very large part of both surfaces of the whole of the bones of the skull.

These two preparations show you the usual appearances produced by caries of the cranium, when occasioned by the two common causes of its occurrence—viz., syphilis and scrofula; and you may perceive how much alike the diseases are, though the origin is so different; in fact, you can hardly distinguish one from the other. Sometimes, however, as you might expect, necrosis of considerable portions of the bone is added to the unhealthy ulceration, of which combination this skull is an excellent example. The bones are seen to be extensively affected with caries. On the frontal bone the disease has been principally confined to the outer table, and in one or two places, both tables have been destroyed. A large portion of the right parietal is diseased throughout its entire thickness; but the exfoliated portion is not quite separated from the surrounding bone. On the left parietal, the disease, although extensive, is confined to the external table. The hard palate is, for the greater part, destroyed, and a free communication is thus established between the mouth and nostrils. The body of the sphenoid presents, on its under surface, a deep excavation, large enough to lodge the end of the finger, the cavity being perfectly smooth. Both malar bones are also affected with caries.

Sometimes in strumous disease, instead of the superficial caries of the

surfaces, distinct tubercles of strumous substance are formed, as you may see in this preparation, in which they are seen of different sizes, lodged in excavations in the bone, both on its inner and outer surface; and they were not only found towards the upper part and sides of the skull, but were also situated in the sphenoid bone, and elsewhere at the base. The lad from whom it was taken was under my care for scrofulous disease of the hip-joint, and was suddenly attacked with pain and other head symptoms, ending in coma a few days before his death. Had he lived, these large flat tubercles—one nearly an inch broad—might have formed abscesses, for some were beginning to suppurate, or might have ulcerated, so as to perforate the skull, as is now and then seen in strumous patients, the holes being then about half-an-inch in diameter, through both tables, and the edges subsequently rounded off.

The most extensive strumous caries, and the most rapid in its progress, which I ever saw, was in the person from whom this beautiful preparation was taken. The patient, 24 years of age, was admitted March 6th, 1850, by Dr. Nairne, for consumption. [For this case, see *postea*, p. 349.]

It must be acknowledged, however, that strumous disease of the head affects the temporal bone more frequently than the flat bones, such as I have now described to you, beginning sometimes in the petrous bone, sometimes in the outer ear, and sometimes extending into the brain itself, the cerebral abscesses discharging through the ear. Scrofula may, in fact, take place not only in the cranium, as you see to-day, and in the cancelli of the bones of the joints and spine, of which I spoke in the last lecture, but it may attack every bone. And you may see, in a remarkable skeleton of a baboon in my collection, an ulceration of apparently analogous character in almost every bone of the body and limbs, produced probably by similar causes with scrofula, namely—confinement, with impure air and improper food.

I have made these observations on the subject of caries and necrosis of the cranium, because I wish you to observe the phenomena attending the disease in a case well deserving your attention, which is now in the hospital. I mean that of John Carpenter, 34 years old, admitted on the 28th of December, whose history is thus related:—The absorbent glands in his neck began to swell about four months ago, and, subsequently, suppurated and burst. Soon afterwards his forehead began to swell, and continued to enlarge till a fortnight before his admission, when it ulcerated, but has continued to enlarge since the ulceration. The forehead presents a circular swelling, about four inches in diameter, having three ulcerations, having deep sloughs adherent to small sloughs of the skin, not yet separated; bridles of living skin dividing the openings from each other. The edges of the openings are inverted and undermined, and the skin around the swelling has a lurid, unhealthy appearance. There is also a swelling of similar appearance over the right clavicle, having also three ulcerated openings, through which a

sloughy and strumous-looking substance protrudes. Several of the glands in the neck still discharge, and there are cicatrices of other openings. He has also lost his voice from recent cold, as he says, to which some former ulceration of the throat, and cicatrization, may contribute in some measure. His pulse is 112, and his tongue clean. There is no venereal history, except that fifteen years ago he had a sore, but not since that time; and he is married, and has four healthy children, and has had no illness before the present attack, which he attributes to bad living, and exposure to wet and cold; for he has had meat only once or twice a week, having been out of work, and having his family to support.

And this opinion I am inclined to believe is correct, for it is sufficient to account for his state, and there are no secondary symptoms of other parts; and the state of the glands in the neck, occurring nearly at the same time with the disease of the head, shows a decidedly scrofulous condition of his system. It makes no material difference, however, in the treatment of such a case, even if it had originated in syphilis, or from the action of mercury along with it. The notes tell us, that the discharge continued very profuse, and, on the 9th of January, that the sloughs were coming away slowly, and that they prevented the bone being felt by the probe. On the 20th, however, a considerable mass having come out, the surface of the frontal bone was extensively exposed, and, when the whole cavity is clean, you will probably see that the pericranium has died as far as the swelling extended under the skin, which is to the extent, as is remarked, of about four inches.

There seemed, at first, some chance that a similar denudation of the right clavicle might ensue, from the resemblance of the sloughy swelling over it to that upon the head; but, having divided the skin between the openings a few days ago, the slough has come out, and the bone appears to be still covered by periosteum.

Having, of course, given him a good diet, I prescribed for him some decoction and extract of sarsaparilla, to which I added three drachms of solution of bichloride of mercury, daily; not, of course, for its efficacy against syphilis, but because the yellow condition of the selerotic and sallowness of complexion made its alterative influence desirable upon the general system. Under this treatment, you have seen that his health has very much improved, and therefore I yesterday omitted the mercurial medicine, and have directed the sarsaparilla to be continued alone.

Had he presented himself earlier, such extensive sloughing of the pericranium, and consequent exposure of the bone, might probably have been prevented by an incision through the soft parts, which was no longer called for when two or three openings had already formed at the time of his admission. But, at the same time, you must not be hasty in opening collections of matter under the pericranium, in either strumous or syphilitic cases.

Such a mass of thickening and morbid deposit with low vitality, as Carpenter has had, is much more rare than what are comparatively more simple abscesses. And in them, in almost every case, you may hope to procure the absorption of fluid, and the pericranium becomes again adherent to the bone; or, if you fail in this, yet if you delay the puncture till time has been afforded for your remedies to produce a more healthy condition of the part, through the general system, you may succeed in preventing exfoliation, which an earlier opening would materially endanger.

If matter is forming rapidly, and raising the pericranium from the bone over a larger surface, you may sometimes with advantage make a small puncture, to let out the pus and take away tension, and let this heal, with the hope that, before it can fill again to the same extent, your remedies may have produced their influence upon the disease and stopped it altogether, especially in cases primarily owing to syphilis.

A young child was under my care with an enormous abscess, which had separated the pericranium over nearly the whole extent of the skull from ear to ear, and from the forehead to the transverse ridge of the occiput, which I opened by a small opening on one side, pressing the soft parts down to the bone. Being an acute formation without strumous substance in the pus, the pericranium again adhered to the bone over the whole extent, except just at the opening, where a small exfoliation took place. Had I been obliged to make several openings, or an extensive incision, exfoliation might have taken place to as great an extent, as the bone was exposed to the air.

It is probable that all the bone in Carpenter which is exposed will die, whether through both tables or not cannot be predicted. If both tables, as in the preparation before you, become necrosed, the separation of so large a piece is very tedious, several years sometimes elapsing before it is loose. Nor can you safely use much force in order to effect its removal, as you cannot always be assured that no adhesions to the dura mater may not still remain in small detached parts. Where you can get a bone forceps beneath the edges long after the apparent death of the bone, you may do so gently, to cut off portions of the dead bone; but let there be no violence endangering mischief to the brain.

The case before you is one which is well deserving of your observation and remembrance.

[NOTE.—At a subsequent period it seemed probable that the vitality of almost every part of the bone remained, so that there would be scarcely any exfoliation whatever.]

[*Medical Times*, Feb. 18th, 1854.

TWO CASES OF EXTENSIVE

ABSORPTION OF THE BONES OF THE HEAD,

FOLLOWED, IN ONE OF THEM, BY

HERNIA CEREBRI.

BY CÆSAR H. HAWKINS, F.R.S.,

President of the Society.

READ MAY 27TH, 1856.

CASE I.—G. C——, æt. 24, was admitted into St. George's Hospital, under the care of Dr. Nairne, March 6th, 1850, with disease of the right lung, which commenced above a year before with severe inflammation, for which he was under treatment eight months. His present attack began, five weeks before his admission, with hæmoptysis, succeeded by sanguineous and muco-purulent sputa, and other signs of tubercles of the right lung.

Three days before his admission he felt pain on the right side of the head, soon followed by a swelling, without his having suffered in any way beforehand from any affection of this region. For this I was requested by Dr. Nairne to see him, and on the 15th, about twelve days after the occurrence of pain, I opened an abscess beneath the pericranium covering the lower part of the parietal bone. In the early part of April, I opened a second abscess, and on the 12th, a third, so that a considerable part of the side of the cranium was now denuded of covering by the extension of the inflammation towards the occiput and forehead, the matter being unhealthy and scrofulous, with flakes of lymph in it.

On the 19th, some purulent discharge took place from the right ear, which had not been affected at any previous time, and the disease was extending towards the vertex, where another incision was necessary.

Notwithstanding free discharge from these incisions, the disease, by the 29th, had extended across the vertex to the left side, where a fresh collection of pus required to be evacuated; nine or ten incisions being altogether required in different parts, while the pericranium still continued to adhere in some parts between them. The strength of the patient gradually declined, and sometimes in the last few days he seemed scarcely conscious,—from exhaustion rather than from any local affection of the brain,—and he sunk on May 18th, about ten or eleven weeks from the first sensation of pain in the head.

On examination, the scalp over the crown and right side of the head was found thickened and infiltrated with serum, and the pericranium was separated from the bones over almost the whole of these parts, except towards the anterior part of the frontal bone, and it was thickened and presented an appearance somewhat like brawn.

The entire parietal bone, the right half of the occipital, the squamous and mastoid portions of the temporal bone, and a considerable part of the frontal, together with a part of the greater wing of the sphenoid entering into the right zygomatic fossa, were affected on both surfaces with caries. Very delicate and thin layers of new bone, of a whitish colour, were deposited on the internal surface of the frontal and occipital bones, but only to a slight extent. The interior of the mastoid cells and the cavity of the tympanum were filled with purulent fluid, and their lining membrane was thickened. The small bones of the ear were entire ; but the membrana tympani was perforated. Corresponding to these affected parts of the cranial bones both the pericranium and dura mater were found altered, rough, and thickened, and detached from the bones, quantities of thin, flaky, purulent fluid intervening. The pericranium and dura mater were both thickened ; but the smooth serous surface of the latter was unaffected. The superior longitudinal and right lateral sinuses, as far as the petrosal, were obliterated by fibrinous coagula. The brain was healthy.

Where least affected by caries the bones presented a worm-eaten appearance; but towards the front of the right side of the head large openings existed, where the bone had been entirely absorbed, around which other portions were very thin, though not yet entirely absorbed. No part whatever had died.

The cavity of the right pleura was completely obliterated by old adhesions, and the lung consolidated, with cavities towards the apex.

The kidneys were congested and the capsules adherent ; and the liver was large and soft.

There is no doubt that the disease, in this consumptive patient, was scrofulous caries of the bones of the head; but, although the disease itself is not uncommon, this particular case may deserve attention on several grounds.

Scrofulous disease of the cranium usually occurs in one or more distinct tubercles, or deposits of strumous substance between the bone and the pericranium, or between the bone and the dura mater, which advance slowly towards suppuration, and, when situated externally, constitute strumous nodes of a round or oval shape, the periosteal covering shading gradually off into the undetached membrane. In a lad admitted for diseased hip into St. George's Hospital, cerebral excitement ending in coma, caused death in a few days after pain in the head was first complained of, and the early stage of this form of the disease is very well seen in the preparation on the table. In this case six or seven tubercles with roughness and excavations in the surface of the bone existed on one or other side of the cranium, and one in the sella turcica, while the other parts of the bones were quite healthy, the immediate cause of death being some scrofulous tubercles in the brain.

Sometimes, however, after injury, and perhaps when a strumous state of the system is less strongly developed, there is general inflammation of the cranium over almost its whole extent, both surfaces being worm-eaten, as it were, with numerous depressions, filled with gelatinous fluid of various depths, or even entirely perforating the bone by numerous small openings. But even in these cases, as far as I have seen, if suppuration takes place it is generally in separate small abscesses, like soft nodes, not numerous or over a great extent of surface at any one time, and only forming small perforations through the skull.

I have indeed seen the pericranium in children occasionally separated from the bone to a great extent; but it was in the form of acute inflammation without caries, or scrofulous deposit, and when opened by a small puncture, if pressure be employed, the pericranium may again unite with the bone without any exfoliation, or with the loss of a very small portion in the seat of the puncture, even when the abscess covers above half the head.

In the cases before described, the chronic nature of the disease is generally well marked, as successive portions assume from time to time a more advanced stage of suppuration and caries; and when a similar worm-eaten appearance of the skull is occasioned by the effects of syphilis and mercury, the disease is also found to be of a chronic kind, with the additional fact of extensive necrosis in many of the worst cases.

In this case, on the contrary, the disease commenced in one part of the side of the head, the first abscess being opened as early as the twelfth day after pain was first felt. From this part the inflammation spread with unexampled rapidity in all directions, though matter formed more rapidly in some parts than in others, so as to require separate openings; the whole duration of the case being little more than ten weeks, in which time more than half the cranium became affected on both surfaces with the immense destruction observed in the preparation, and already described, instead of the small perforations usually observed.

It will have been noticed that suppuration existed in the mastoid cells and cavity of the tympanum and outer ear; but the inflammation clearly spread to the ear from the side of the head, where it commenced, and therefore the several parts of the ear were perfect in structure, and the patient had been quite free from previous affection of this organ.

The second case was in every respect, except the great loss of bone by absorption, different from the former, and differed in many respects from any other case I have seen.

Case II.—C. L——, æt. 36, was admitted into St. George's Hospital, under Mr. Keate, on the 2nd of February, 1832, with a pulsating tumour,

nearly five inches in diameter, on the upper and posterior part of the right side of the head; it was soft and elastic with a well-defined boundary, and the pulsation could be felt and seen over its whole extent; in its centre a round fungus projected through an opening in the scalp, of the size of a small walnut, in which pulsation was also evident, and the apex of the fungus looked like layers of coagulated blood. The tumour was not tender to the touch, nor was there any apparent change over the adjoining bone. On the opposite side of the head, in the superior part of the left parietal bone, was a circular depression, about three inches in circumference, which was soft and elastic, and pulsated strongly, the edges of the bone not being abrupt or well marked round the aperture, and pulsation could also be felt in another smaller depression near this large one.

He complained of occasional pain in his head, which became very severe if he took any kind of stimulant; he was aware of some confusion in his ideas occasionally, and, if he thought much, a sensation of giddiness came over him; on lying down, or lifting his head from the pillow, he felt the tumour pulsate strongly; and the least coughing, or straining, or stooping forwards, caused great pain in the tumour, which sometimes bled slightly. At night his eyes were dim, and muscæ volitantes passed over them. He had perfect use of his limbs, and passed his water naturally; his countenance was yellowish, and rather flushed.

He had lived freely, and had been in the East and West Indies as a sailor and gentleman's servant, but had enjoyed good health, except a tendency to rheumatism; twelve or fourteen years ago he had twice been salivated for chancre, but had not suffered since that time.

It appeared that two years and a half before, while asleep on the grass in the sun, he suddenly felt acute pain in the head, which remained more or less for several days, incapacitating him from work. Some time afterwards, the exact period being unknown, he first perceived a small depression in the situation of the tumour, of sufficient size to admit the end of his little finger. This depression went on increasing for six months, making greater progress when he suffered from cold, or when he had drunk freely, the pain being at those times very severe; and at last a tumour formed instead of the former depression. Eighteen months ago, and a year after the first seizure, he was laid up on account of the severity of the pain, and the increase of the tumour, and at this time his attention was drawn by his surgeon to its pulsation, which he had not himself noticed. Poultices were applied, and the tumour was punctured with a lancet, but only a little blood escaped. Attempts were made to induce suppuration, but the puncture healed, and he went about his usual avocations, suffering no great pain. A month afterwards it was again punctured, but with the same result, so that it may be presumed that the tumour was supposed to have been abscess.

From this time nothing more was done, the tumour not increasing in size, and only giving him occasional pain, and not materially affecting his health till eight weeks ago, at which time, while walking in the street, he suddenly felt a sharp pain in the head, with giddiness and partial insensibility, which caused him to fall against the wall. He was supported home, and bled in both arms, and had leeches applied, and the tumour was punctured a third time, but again, as he believed, only blood escaped. He was only laid up for four or five days, and then went about again; but from that time the present fungus began to protrude through the opening, and has gradually increased. He has also some enlargement, like periosteal thickening, around the lower part of the femur, which is rather uneven, but not tender nor painful.

Some difference of opinion existed on his admission, on the 2nd of February, as to the nature of this fungous tumour, whether it originated in the bone or dura mater, but its cerebral origin was, I believe, unsuspected; though at the present time it would probably be readily detected by microscopical examination. With such a fungus, however, in one part, and an aperture in the skull at another, it is not surprising that fungous tumour of the dura mater, or of the diplöe, should be suspected, rather than so rare a case as that of hernia of the brain from disease of the bone.

On the 8th, a ligature was passed, not very tightly, round the projecting fungus, which sloughed off on the 16th; and on this day Mr. Keate passed a needle, armed with a double ligature, across the base of the tumour, and tied each half separately, without the production of any bleeding.

On the 22nd, except occasional headaches, nothing particular had occurred and two or three portions of the tumour having sloughed off, and other parts being dead, the tumour seemed much less in size.

On the 25th, he was somewhat feverish, with shooting and throbbing pain in the head; the ligatures had separated with some more sloughs, but the tumour was again growing, with increased pulsation. This was partly relieved by bleeding.

On the 27th, there was some numbness of the right leg and left arm, and some dimness of sight, especially in the right eye, with increased giddiness on moving, accompanied by some fever and disposition to sickness.

On the 29th, a large part of the fungus came away, of a brownish colour, looking like fibrous coagulum, with soft blood-vessels, containing coagulated blood, and in parts the sloughs looked like medullary tumour around such blood-vessels. He was less feverish and ill.

On March 6th, though feeling better the last few days, he was languid and drowsy, and had some partial paralysis of the left side of the face, and the movements of the left arm were much impaired, with numbness of this arm, and, to a less extent, of the left leg also.

On the 8th, this arm was entirely paralyzed, and the tumour was larger and more sloughy.

On the 12th, the whole of the left side was paralyzed, and the right leg partially so; the sphincters were relaxed, and the evacuations passed unconsciously, and he had some difficulty in swallowing. The tumour was increasing, although portions sloughed off.

On the 16th, he became comatose, and died on the 20th of March.

The nature of this pulsating tumour was at once rendered plain by examination, and may be clearly seen in three preparations on the table, preserved in the museum of St. George's Hospital.

The greater part of the calvaria has been dried, and it will be seen that towards the anterior part, the bones are, to a great extent, very much thickened, being in some places half an inch thick; their tissue is firm and dense, like ivory, the diplöe being obliterated. Towards the posterior part, they are very thin, and, in many places, present large apertures, where, during life, the pulsations of the brain could be easily felt. The external surface of these bones is, for the greater part, rough and mamillated, and the corresponding internal surface more porous than natural.

In another preparation, the remaining portion of the skull-cap has been preserved in spirit, in order to show the opening in the scalp through which the protrusion of the brain had taken place, and in it will be seen the complete adhesion of the dura mater to the integuments, while portions of the arachnoid and pia mater are observed hanging from the inner surface of the dura mater, to which they adhered round the opening.

It will be observed, in a third preparation, that the fungus was not of large size at the time of death, and that an opening in the centre leads into an abscess of considerable size in the right hemisphere, almost as deep as the lateral ventricle, the purulent contents of the abscess having been discharged through the opening during life. The cerebral substance around the abscess and fungus, was vascular, and altered in colour, but was not otherwise diseased.

Every surgeon is familiar with the protrusion of the brain, which follows many cases of injury of the head, of recent occurrence, in which the removal of the bone leaves the dura mater exposed; but hernia cerebri from disease of the bones of the cranium is comparatively a very rare occurrence. The reason of this is obviously the chronic inflammation of this membrane, by which it is strengthened, so as to bear the loss of the osseous covering in cases of ulceration and necrosis, before the aperture is formed in the bone. Such thickening of dura mater also slowly follows injuries, when the patient survives the removal of portions of the cranium. In this case, on the contrary, if the edges of the opening are examined, it will be seen that the

pericranium and the dura mater are both in a perfectly normal condition, even close to the irregular margins of the bone; and therefore the pressure of the dura mater against these rough edges appears to have been as injurious to the membrane as in cases of recent injury.

I have not myself seen hernia cerebri, even from extensive exposure of the dura mater after necrosis, and I am inclined to believe it must be still more unusual, when the integuments are entire, as in this case.

That the disease commenced in the bone, and not in the brain, must be evident from the depressions which preceded the protrusion, from the extensive disease of the calvaria in other parts, and from the fact that below the smaller apertures, in which the pulsation of the brain was seen without protrusion, the dura mater and the brain were quite unchanged. Here, therefore, the increasing size of the aperture in the bone might have been followed by the same results, if the patient had survived much longer, and the edges had become as irregular as those of the opening through which the hernia had taken place.

The exact nature of the disease in the bone may admit of some doubt, as it is, I believe, very unusual for the cranial bones in chronic inflammation to be seen with marks of so much healthy action as in this case. The ivory, solid thickening of some parts of the bone, and dense nature of the mamillated portions even among the ulcerated parts, where the bone had been thinned by absorption, are remarkably different from the soft worm-eaten appearance of the more common caries of the first case. It may, perhaps, be thought from the patient having been subject to rheumatism, from the enlarged condition of the femur at its lower part, and from the commencement of the disease, while the man was lying on the grass, that the inflammation of the bone was of a rheumatic character; but if this conjecture be correct, such extensive absorption of the bone is at least very unusual; though an analogous ivory deposit on the articular ends of the femur and tibia, with depressions from absorption, are certainly sometimes seen in long-continued rheumatic inflammation of the knee-joint.

There is nothing in the history of the case, or in the morbid appearances, which at all point to a syphilitic origin.

Supposing, however, that the disease was inflammatory, whether rheumatic or otherwise, it seems impossible to give any explanation of the extensive absorption at one part, while other parts were immensely increased in density.

The opening in the bone having been formed by absorption, was succeeded, after an interval of at least some months, by a swelling of much greater diameter than the orifice in the bone, as if the dura mater had given way long before the small fungus protruded through the bone, and the cerebral matter had spread out between the bone and the integuments; but it may

admit of doubt whether the brain would have forced its way through the scalp, had not repeated punctures been made by the surgeon's lancet—the last of these punctures having never healed, although the former ones had done so; and the fungus having soon followed the final puncture.

[*Med. Chir. Trans.*, vol. xxxix., p. 285.

CASE OF

LARGE FIBROUS TUMOUR OF THE CRANIUM.

William Matthews, æt. 53, was admitted into the hospital Dec. 13th, 1842. About three years previously, he accidentally observed a tumour on the crown of the head projecting slightly above the level of the rest of the bone, which had gradually increased to three inches in diameter, with a central prominence about three quarters of an inch above the proper level. In its circumference it is continuous with the rest of the cranium, the outer table being elevated, and in two places this has been absorbed, and soft holes are felt with slight pulsation, the general surface being somewhat irregular. There were grooves on the surface in various directions, chiefly towards the temple and forehead, in which pulsating vessels were sometimes felt. He has frequently felt giddy on turning quickly or stooping, and has had trembling and twitching of the limbs, but has never had much inconvenience till five days ago, when he fell down in a state of insensibility, which lasted some time.

After a short time he became an out patient, but was again admitted on April 10th, having had a severe epileptic fit without convulsions or paralysis, but with tonic spasm of the muscles of the body, and the head was drawn to the left side, and he had for a day or two a dull heavy appearance, and nervous manner.

On the 12th of August, 1844, the tumour was nearly of the same size, and the holes in the outer table remained, in which pulsation was felt, and if pressure was made in this part he became quite faint, and had a feeling of ceasing to breathe, and about three beats of the heart restored the depressed soft part to its former level. The same sensations were also created by his stooping his head much, even if he remained erect. He had a bad fit two days previously, to which he had been occasionally subject since he first came to the hospital, and they continued from time to time during the remainder of his life.

In November of this year he had an attack of great pain in the whole of his left arm, with numbness of the hand, and he could not hold this arm

steady ; the right arm was slightly affected in the same way ; and he had much pain in the head, and fluttering of the heart.

In August 1847, one of his fits was attended with more convulsions than on any former occasion, followed by some delirium for several days, in which he fancied himself swung from side to side, and was constantly moving about in bed. The tumour was a little larger and more elevated than five years ago, the apertures being of the same size, with slight pulsation, the quantity of soft substance in the apertures, and on the surface of the tumour somewhat varying, but not in correspondence with the attacks of head symptoms, which evidently depended on the state of his general circulation. His head being shaved, several large vessels were perceived ramifying over the tumour, and for some distance around it, some of which pulsated, but others were enlarged veins below the skin. In the latter part of this year, he was much troubled with the pain and numbness, and twitching of the arms—sometimes the right, and at other times the left ; his eyesight was impaired, and his memory became very bad.

On January 6th, 1850, he had the worst epileptic fit he had ever had, the last having been six months previously. His general health was better from a residence in the country ; but the movements of his feet and hands were very imperfect, as well as their sensibility to touch ; he was often giddy, and sometimes had double vision, and the tumour was often painful, but had scarcely increased in size ; one of the openings in the outer table seemed to be covered by new bone, but pressure on the other still affected the heart and brain, so that if it were continued he would drop down insensible.

He was finally admitted under Dr. Wilson for gangrenous inflammation of the lungs, of which he died on the 16th of June, 1854, aged 64, about fifteen years after the tumour was first noticed by him.

Post-mortem.—The tumour was situated at the back part of the vertex in the median line, in the situation of the superior angle of the occipital bone ; it was eleven inches in circumference, its breadth from side to side about three inches, and from before backwards about four inches ; its surface was uneven and lobulated, but firm and bony, except about its centre for a small extent where it was softer and elastic. On removing the scalp, which was not very adherent to it, three or four vessels of large size were seen passing from it directly into the central part of the tumour. The pericranium was closely adherent, and considerably thickened and dense in texture, particularly over the softer central part. The bones around the tumour were not increased in depth, but the diplöe was obliterated. The tumour was composed of irregular bone on the outside, rising about an inch above the proper level, and in the centre it was of a fibrous texture, of a reddish white colour, mixed with delicate spiculæ of bone. This part had perforated the

inner table, and projected between the skull and the dura mater, the opening itself being about the size of a fourpenny piece; this inner part was received in little depressions of new bone, and was traversed by two or three vessels of considerable size. The inner surface of the bone for some distance around the tumour was very vascular, and the meningeal arteries were large and the grooves proportionately deep. The inner table was absorbed in several places, where the soft tissue had been deposited to the same extent as the tumour, while additional bone had been deposited on the outside. The new structure thus thinly spread over the outside of the dura mater had in the centre a projection of softer nature about the size of a walnut, while a thin layer covered the dura mater around to the same extent as the tumour. Interspersed in the soft tissue were numerous minute spiculæ of bone, which arose in a vertical direction from the surface of the dura mater, which was very vascular, particularly on its inner surface on both sides of the falx, and in some parts was covered by a thin layer of organized lymph. To the same extent as the tumour, and accurately limited to its circumference, the parietal and visceral arachnoid were intimately adherent. On removing these adhesions on the left side, the back part of the left hemisphere of the cerebrum was found to have been compressed to the depth of half an inch by the tumour, and at one point, about the size of a probe the new growth itself pressed on the brain to a slight extent. On the right side, the new growth had perforated the dura mater to the extent of a fourpenny piece, and covered the inner surface of this membrane to the same extent as on its outer surface, and pressed considerably on the brain, at the back part of the right hemisphere near the longitudinal sinus. The extent to which the brain was here implicated was about an inch and a half in breadth, two inches in length, and about an inch in depth. It appeared, at first sight, as if the brain had been absorbed in this situation, and that the tumour had passed into its substance; but on more minute examination, it was found that the tumour was merely cushioned in it, for the gray matter could be distinctly traced around the whole inner surface of the tumour. The pia mater was very vascular, the vessels presenting a beautiful convoluted appearance.

The soft portion of the tumour, which was very brain-like in appearance, was composed entirely of a mass of nucleated spindle-shaped fibres.

There were numerous adhesions of old standing, between the pleuræ of the right side, and nearly the whole of the right lung was in a state of gangrene. The left lung was healthy with the exception of old adhesions. All the other viscera were healthy.

CLINICAL LECTURE ON CARIES AND NECROSIS OF THE STERNUM AND RIBS.

1. Caries of sternum; abscess in axilla.—2. Acute abscess of mediastinum; separation of bones of sternum.—3. Caries of sternum; abscess of mediastinum, from injury.—4. Caries of sternum, resembling aneurism; abscess in chest; pleurisy; hydrothorax.—5. Caries and necrosis of ribs.—6. Necrosis of ribs; abscess in chest; operation.—7. Empyema; exposure of ribs.

GENTLEMEN,—Having brought under your notice, in the last lecture, the subject of caries and necrosis of the cranial bones, I propose now to describe to you some cases which will illustrate that of caries and necrosis of the sternum and ribs, the diseases of these bones being interesting and important for the same reason as with the cranium; I mean, the liability in these parts, that the progress of the disease should implicate the organs and textures within the chest, just as the others affect the brain. There are several cases now in the hospital, which will serve to form a series of the consequences of disease of these bones.

Caries of the sternum and ribs, as of the cranium, or other bones, may arise spontaneously, or from injury; from morbid constitutional states, as syphilis, or scrofula; the ulceration of the bones may be simple, or unhealthy and phagedænic, and may or may not be followed by necrosis of any portion of the bone; or, necrosis having taken place, it may sometimes be accompanied by caries, and at other times by healthy ulceration; finally, as in the cranium, the disease is very tedious, and is to be treated through the constitution, rather than by surgical interference, in the majority of cases.

1. John Thomas, 30 years of age, was admitted, on the 5th of February, under Dr. Nairne; but I was requested to take charge of him, on the following day, as a cough he complained of did not seem to arise from disease of the lungs. Three months ago he had a severe attack of shivering, and the next day he says he had numbness and partial loss of motion of the left arm; a few days afterwards he perceived a swelling in the axilla, without much pain, which continued to increase, and extended under the pectoral muscle to the sternum. About three weeks afterwards the abscess broke, and discharged largely, and had, on his admission, two small openings in the axilla, with a large swelling under the pectoral muscle; besides this, however, he had a small pointing of matter on the left side of the sternum, about its upper third. He was thin, pale, and emaciated, and suffering from feverish irritation, with a quick, weak, pulse, and a little cough. A little wine had been ordered him, which I continued, with meat diet; I enlarged the opening in the axilla, so as to prevent the confinement of pus, and opened also the abscess over the sternum, from which a little thick matter escaped, and then I found that a probe passed a little way into the substance of the bone, which was soft and carious.

I am inclined to believe, that in this case the disease of the sternum was the original cause of his illness, though he had not observed it, and that in consequence of this the matter had made its way beneath the pectoral muscle; for the ligamentous tissue covering the periosteum, where the pectoral muscle arises, is not always disposed to ulcerate, and readily allows matter to burrow; and in the loose cellular tissue below the muscle, it would naturally pass towards the axilla; or it may be that glandular inflammation followed the disease of the sternum, and an acute abscess around the gland, with the rigour he describes, and long-continued fever afterwards; at all events, matter primarily formed in the axilla could not give origin to caries of the sternum. We found that the loss of power in the arm which he spoke of was nothing more than the stiffness and pain in moving the arm, from the inflammation about the pectoral muscles. He was relieved by the openings I made on the 7th; but on the 14th, there came on some erysipelatous redness round the abscess of the sternum, with a little disturbance of the system; the next day it had spread to the axilla and on the abdomen; and to-day (the 18th) much of the back and front of the body is covered with erysipelas of a low character; his pulse yesterday was very quick and irritable, and he seemed very low and depressed, with a little more cough. I will not speak further of his erysipelas, however, except to observe that his state is just that in which secondary abscesses are likely to occur.

The disease in the sternum appears then, in this case, to have arisen without evident cause, and is perhaps confined to the outer part of the bone, and affects a small part only; it seems only to produce external effects, unless his cough has also been produced by it.*

2. In the next case I will describe to you, the attack was much more sudden and acute, and the disease extended through the whole thickness of the bone. A young woman, 20 years of age, was admitted under my care on the 7th of April, 1847, with scrofulous lupus of the nose and face, which had existed for three years. This was beginning to get better, when, on the 17th, she was attacked with erysipelas of the face, with some fever, which subsided in a few days, and had the effect, as you have seen in a lad now in the hospital, of completely healing the lupus for a time. On the 21st, however, it is stated in the notes that she had a cough, without expectoration, which on the 24th, is said to have been better, but on the 25th had increased again, with difficulty of breathing, and pain in the centre of the chest, increased by inspiration. She was weak and feverish, and perspired a good deal, with a pulse of 112. On the 30th, the chest symptoms were improved, but I perceived an abscess over the sternum, where the skin had been affected by the erysipelas, to which, therefore, before puncturing it, the

* This man was readmitted a few weeks afterwards for erysipelas of the face, but the sternum continued sound.

abscess seemed to be attributable. On opening it, however, some thin, bloody pus with flakes of lymph escaped, in greater quantity than the apparent size of the abscess; and on examining the part, the probe passed completely through the sternum into the mediastinum. In short, there was suppuration on both sides of the affected bone, just as you may see in the head, though not enough in the mediastinum to make an impulse visible on coughing; this abscess gave origin to the cough and pain,—which was not exactly like ordinary inflammation of the lung or pleura.

On May 2nd, the cough was increased, with slight yellow mucous expectoration; the breathing was hurried, and was performed more easily in the upright than in a recumbent position; and her pulse was 144; but she had now no pain on coughing, except in the situation of the abscess. The next day she was better, her pulse 100 only, and she had less cough; the two upper bones of the sternum, the manubrium and gladiolus, were found to move so freely as distinctly to crepitate, the whole union between them being destroyed. From this time she gradually got better. On June 4th, the abscess had quite healed, but reopened, so that a small sinus still led to the bone, but without apparent likelihood of exfoliation, and probably it soon healed.

3. The next case for your observation derived its origin from an injury; it is that of John Johnson, 48 years of age, admitted into Radcliffe ward, on February 5, who had had several abscesses, at different times, in several parts of his body, which are now well, but which show that his constitution is not a very good one. Seven months ago, he received a blow on the middle of the sternum from an anchor, which might have broken the bone, or dislocated the cartilage of a rib, but of this there is no evidence. The part began to swell, and continued to increase till a fortnight ago, when it broke, and the small orifice was the next day enlarged. He had had a cough for a month before this, but on admission his respiration was free and natural, with the exception of some bronchitis. There was no illness before the opening of the abscess, but directly afterwards he had shivering and copious perspirations, which continued for several days, and when admitted he was thin and weak, with an anxious expression from the illness he had experienced ever since. There was, on his admission, a round opening, an inch in diameter, over the centre of the sternum, with thick and purple edges, and condensation of the periosteum and soft parts around the abscess, by which the skin was undermined to some little distance; the bone was covered by periosteum, thickened, and with a white slough on it, and it is found that the probe does not at present touch the bone (though I dare say some little perforation of the periosteum will be discovered by-and-bye), but it passes on the left side of the bone, as if between the side and the cartilage

of the rib, the surface being exposed, but whether dead or carious, remains to be proved.

In this case, then, as in the last, there is suppuration within the chest, and you perceive in his history the effects of exposure of an unhealthy collection of pus to the air, in the sudden accession of severe fever and inflammation, which took place to a less degree in the last case, and is contrasted with the immediate relief which the opening of a more healthy abscess produces, as in Thomas. Under the use of quinine and good living, Johnson has already a good deal improved in feelings and strength, and his cough is less; but the result is doubtful, and well deserving of your attention while he is under our care.

[This patient left the hospital very much improved, but before the communication with the mediastinum was entirely cured, two openings through the sternum having been found.]

4. It remains for me to bring one more case under your notice, which occurred some time ago, and shows you the still more extensive mischief which disease of the sternum may occasion, as well as one or two other points in the history of such cases.

A man, 40 years of age, was admitted under my care, April 7, 1848, so that some of you may perhaps remember his case. He had a tense swelling over the whole of the left side of the sternum, and some fluid could be felt at the upper and lower part of it, the intervening part being hard and inelastic; it presented no thrill, only the heart's sounds, and it had been observed a month. He had not been living well before his admission, and had never had good health since he returned from the West Indies, nine years since: he served twelve years in the army.

Here then are two circumstances for your notice. You observe that the notes contain an observation that there was no thrill perceptible in the swelling, which was under the periosteum and ligaments of the sternum, and without discoloration of the skin. The fact is, that the disease resembles those cases in which an aneurism of the aorta makes its way by absorption through the sternum, and therefore you should carefully examine any swelling in this part before puncturing it. I understand that in Johnson's chronic abscess attention was drawn to the same circumstance,—a slowly-formed swelling with hard margins, and dark purple skin, resembling a later stage of an aneurismal swelling, when it has reached the skin and is on the point of bursting.

A second circumstance to be noted is the double pointing of the matter, which arises from the very dense fibrous and ligamentous tissue covering the sternum; it does not easily ulcerate; matter burrows beneath it to a thinner part, and therefore it often happens that several different orifices lead

obliquely to the same carious part, as sinuses, unless you are able to make a free opening near the seat of the disease.

As the skin was uninflamed in this man M'Donald, I thought I would try if the fluid could be absorbed by a blister; and the notes say that on the 17th there was not so much swelling, and much less fluid; and after a second blister, the same note occurs on the 23rd,—swelling and fluid less. But on this date, the notes speak of a cold, and pains in his limbs, and now the fluid doubtless became more purulent, and in such a state no longer admits of absorption. The cold, however, was an attack of pleurisy, for which Dr. Nairne prescribed leeches, a blister, and calomel and opium.

On the 28th, the abscess was larger, and I opened it, the pleurisy being nearly gone, but some cough remaining. On May 2nd, matter was obliged to be let out at the other prominence of its extent, about five ounces escaping; the hard tissues I alluded to preventing the escape of the matter between the two ends of the abscess.

On the 9th we find this note:—"Says he is much better; cough and pain in the chest much less; a probe was passed by Mr. Hawkins two inches in perpendicularly to the surface of the chest, which shows that the abscess evidently communicates with the anterior mediastinum." And no doubt this was the case, as in Johnson's case, and probably the cough and pleurisy arose also, as Johnson's fever did, not from cold, but from inflammation of this internal abscess—just as inflammation of the brain takes place when matter is confined under the cranium. Under better diet, and ammonia with gentian, his health improved till the 26th, when we find that he complained much more of cough, and expectorated a great quantity of viscid, muco-purulent matter; on the 29th he had more pain in his side, and felt weaker; and on June 1st it is stated, "the cough is not quite so troublesome, but he complains of being unable to lie on the right side; there is great fulness of the chest on the left side, and dulness on percussion, wherever the part is most dependent, leaving no doubt of there being effusion of some fluid into the cavity of the left pleura, the lower half of the chest being enlarged, and the intercostal spaces obliterated." A blister, some wine and morphia, and acetate of ammonia mixture, enabled the note on the 5th to say, that the cough was less troublesome, the intercostal spaces somewhat depressed, and respiration heard lower down in the chest. On the 7th, there was again more pain and fulness of the side, one of the openings over the sternum had ceased discharging, and I was obliged to make a third opening on the 9th in a different part. After this he was relieved; the abscesses became quiet. At the beginning of July the diminution of size and of dulness on percussion showed that the fluid was being absorbed, and at the end of the month the discharge was nearly serous, and not always

observed, and he left the hospital, apparently nearly well, and perhaps without any exfoliation whatever.

In this case, then, there was not only inflammation of the cellular tissue in the chest, and of the lungs, in consequence of the abscess in the mediastinum, but a large collection of water in the pleura. You will not understand by the increase of fluid in the pleura at the same time that the abscess discharged less freely, that the fluid in the pleura communicated with the abscess; I only mean that the abscess in contact with the pleura had inflamed this membrane, and occasioned that serous or semi-purulent liquid which is capable of absorption, and which, in this patient, left a very useful lung afterwards.

Such cases of caries of the sternum as I have thus passed in review before you, do not require much to be done locally; portions of bone very seldom die, so as to require any surgical interference for their removal. The caries appears sometimes to leave a permanent opening through the bone, which is smoothed off in time. I have on some occasions scraped away some of the carious bone with a chisel, but I do not know that much was gained by it. In one instance of internal abscess, there was so much distress that I contemplated enlarging the small orifice which existed, by means of a small trephine, but it soon became unnecessary. The great point in the local treatment is to let the opening by which the matter escapes through the sternum, remain as free and direct as possible, and for this purpose I expect to have to enlarge the opening in Johnson, by cutting through the undermined skin, towards the inner orifice. [This has since been done.] Common lotions, acid or caustic, or others, may be applied to the carious parts of the bone, which generally heal up in time, though slowly; it is chiefly through the medical remedies improving the general system, that a cure is finally effected, and they are of the same nature as I spoke to you of in the last lecture.

5. Caries and necrosis of the ribs necessarily resemble, in some respects, the similar diseases of the sternum, and of its simplest form you have an example in Joseph Knuckley, 34 years of age, in Grosvenor ward, who was admitted on the 8th of January, with a small opening in a cicatrix of larger size, a little below the centre of the chest, leading obliquely on the left side to the seventh or eighth rib; just below the left nipple was a second opening, the sinus leading apparently to the same rib, as if the upper and lower parts of the rib were touched by the probe in the two sinuses; and the bone appeared to be carious where it was exposed. The soft parts between were thickened, so that the left side measured a little more than the healthy side of the chest. Respiration was however quite clear both anteriorly and posteriorly, so that it appeared as if the disease was confined to the bone and parietes of the chest. He was somewhat pale, but not in

bad health. A small abscess formed in the first-mentioned place, in September 1849, and the second in August 1850, and have remained open ever since. He has lately been discharged from the army.

The origin of this affection appears then to have been from some fault in the system, and it may perhaps have been from former syphilis, for he has since complained of some pains, which he calls rheumatic, in the limbs, and on examining the tibiæ they both appear enlarged and irregular from deposit of new bone, the consequence of chronic inflammation of the surface, and perhaps of the inside of the bone.

He was first put upon the use of bark and acid, and latterly of sarsaparilla and iodide of potassium, and is a good deal improved in health. With regard to local measures, I have been obliged once to enlarge one of the sinuses slightly, and some nitric acid lotion has been injected into them; the part is less swelled, but it does not appear that any bone requires to be removed, and it is probable that it will be long before the bone becomes sufficiently healthy to allow the sinuses to close.

[A piece of bone subsequently exfoliated, and some necrosis still remained, the man going into the country in May, very much improved in health.]

6. But in the next place let us notice the further progress of caries or necrosis of a rib, when the affection produces internal mischief corresponding to what we have already seen regarding the sternum; the first of which is a circumscribed empyema, but on the outside of the pleura instead of within its cavity, as in ordinary inflammation of this membrane.

A boy, 14 years of age, was admitted into the hospital under my care, Sept. 30th, with a fluctuating swelling about the size of half a large orange, situated over the angles of the ninth, tenth, and eleventh ribs on the right side, and nearly reaching the spine, the upper end of the swelling being near the inferior angle of the scapula, and there was also some general tumefaction of the soft parts in the neighbourhood. There was slight lateral curvature of the spine, the convexity being towards the left side; that is to say, the pain of the disease had made him lean towards the affected side. The swelling was first noticed a fortnight previously, and was then of nearly the same size as at present, but he had felt occasional pain in the seat of the swelling, and general uneasiness of the whole side, for a year. He had been accustomed to carry weights on his head as an errand-boy, which used to give him pain. The respiration was heard very near the swelling, was natural, and was nearly alike on the two sides of the chest; he had no cough; percussion elicited a normal sound, except for a little distance around the swelling, where it was dull; his health did not appear bad, though he was pale, as if of weak habit. The swelling could not be pressed into the chest, nor was there any impulse well marked on coughing.

From these circumstances it was evident that the swelling was not an

abscess of the lung, or empyema making its way externally, and yet from the dulness on percussion, there was evidently some fluid within the ribs, as well as external to them; in other words, that there was a circumscribed empyema external to the pleura, originating most probably in disease of the ribs.

Such collections of fluid will occasionally remain quiet for a long time, while disease stops short of actual caries or necrosis; and if in this condition, as with abscesses of the spine or of the sternum, it is better not to meddle with them, for fear of that severe and dangerous inflammation which we have seen, in Johnson, immediately following the opening of the abscess. A young gentleman has been under my observation for nearly four years, with a collection of fluid, of course not complete pus, of the size of half an orange, at the bottom of which are felt two or three solid masses, like cartilage, attached to one of the ribs; the size of this has not varied much, and it only once gave some pain and inconvenience; but I feel assured, from his very delicate constitution, that an opening made into it might easily have given rise to fatal inflammation and fever.

Of course, however, if an abscess is increasing, or occasions any constitutional effects, it must be opened; and this seemed to be the case in this boy, for he had a slight shivering four days after his admission, and therefore on the following day, when I saw him, I opened the abscess. The note of the next day, Oct. 7th, remarks that the skin around the opening was very tender. On the 8th the discharge was thin and ichorous; and on the 9th he was feverish and hot, and had been sick in the night;—that is to say, the sac of the abscess inflamed, beginning perhaps with the rigour, before the puncture, and increasing for three days till actual fever was present. It is stated also on the 7th, that on coughing, some bubbles of air escaped from the wound; a circumstance which in abscesses about the chest is sometimes of importance, as indicative of communication with the lung; but in this case the air had no doubt previously been drawn into the abscess in inspiration, as it often is, and may increase a tendency to inflammation in any cavity into which it enters.

The fever quickly subsided, and on the 18th there was very little tenderness over the abscess; it was observed that the discharge was increased when he coughed, showing that the inner wall of the abscess, lining the rib, was thin enough to receive an impulse in expiration. This internal cavity contracted, so that on the 31st it is stated that the dulness on percussion was not so extensive, and he left the hospital Nov. 12th, with the rib exposed and dead, but not loose.

In the following January I readmitted him, for the purpose of removing the dead bone, which was supposed to be loose, and on the 22nd I cut through the latissimus dorsi down to the bone, and found that the caries of the bone

had completely divided it across, both ends of the bone being dead to a small extent. These I cut off with a pair of bone forceps, and dressed the wound with lint, to prevent any confinement of matter beneath the divided muscle. No bad effects followed this operation, but I do not know that it did much good, for on Feb. 9th, the wound having contracted, so as to be again nearly a sinus, one end of the cut bone being exposed, I broke off a piece apparently dead, but found it soft and carious, so that the new ends of the bone now left were not free from the same unhealthy ulceration, and discharge was still going on when he again left the hospital, on Feb. 18th.

The deceptive feeling I have just alluded to, is not uncommon in necrosis of the ribs, the motion of this bone at its two ends being so free, that when the probe is pressed against the dead bone at the bottom of a sinus, it appears from its free movements to be quite detached, while in reality the whole bone has been moved. You will more frequently be called on to remove necrosed portions of a rib, than of the sternum, especially when the necrosis is the result of injury, or follows an acute abscess; and in doing it you must remember the necessity for some caution, lest you open the cavity of the pleura. This membrane is of course quite separated from the bone where it is actually dead through its whole thickness, so that it may be cut across with impunity, but it is in contact with the bone close to each end, being somewhat thickened at the point of junction; so that if you endeavour to divide the bone quite beyond where it is diseased, too much attention to this circumstance may lead you into the greater mischief of wounding the pleural lining of the chest.

It is of little use, however, operating on a rib when it is merely carious and not dead; the state of system, which originally caused the unhealthy ulcer of the bone, may remain still in action, as in this boy; and therefore, if you cannot cure the original disease by your internal remedies, and by keeping the sinuses free from confinement of pus, without an operation, you will very likely be disappointed by finding the disease again coming on after you have endeavoured to cut away the diseased part.

But this is not all. You have seen that caries of the sternum occasioned in one patient whose case I have related to you, acute pleurisy, and pneumonia in several others; it is no wonder, therefore, that the irritation of carious ribs should occasion some affections of the same parts, particularly as the patients are of necessity of weak constitutions, in whom phthisis is likely to be developed, if there is a tendency to it. Such was probably the result in the lad whose case I have last brought under your notice, for his mother brought him to see me some months afterwards, with a larger abscess than before, within the ribs, and with all the appearance of fatal disease of the lung in an advanced stage, but she was unwilling to let him come into the hospital with the expectation of his shortly dying.

7. But finally, it is not only from injury or disease, commencing in the ribs themselves, that they become carious or necrosed; suppuration within the chest may also affect them in the passage of the matter outwards; coming in contact with the bone, the periosteum is inflamed, and ulcerates; and the rib, so exposed, may ulcerate and die.

Of this you have a very interesting example in the case of Mary M'Donald, 17 years of age, who was admitted with empyema on December 11th, it appears that in the month of June last she first experienced pain in the left side, in the same part where a swelling subsequently formed, with difficulty of breathing, for which leeches were applied, and she soon recovered. In the following August, a small swelling appeared, which increased in size; and in about a month from its commencement it was opened, when of the size of an apple, but not less than a quart of matter, tinged with blood, escaped. It is evident, therefore, that the chief collection was within the chest, and hence she had felt much pain and difficulty in breathing while it collected, and could not lie on the opposite side, nor retain food on her stomach.

When admitted, two small openings led down to the seventh or eighth rib, which felt to the probe as if only exposed, and not carious or dead; healthy pus was escaping from the opening, the exit of which is increased by coughing, from the pressure of the parts around the abscess, and is facilitated by her lying, as she was directed to do, on the affected side, which assists the gravitation of the fluid; her heart was at the same time pushed far across into the right side, so that it could not be felt under the sternum; she breathed hurriedly, with some pain; and of course respiration was only audible in the upper and back part of this side of the chest; she was weak and pale, with rapid pulse, and emaciation. Whether the lung is only compressed by the fluid, or there is some development of phthisis, I will not now discuss.

She has sufficiently improved in health to make recovery not improbable, and it must have been interesting to you to watch the gradual return of the heart to its proper place, so that it can be felt under the sternum, and even a little to the left side, as it ought to be, showing that she is fortunate enough not to have had the pleura, as is generally the case, so thickened as to prevent the expansion of the lung to a certain degree, with return of the mediastinum and heart. At the same time, however, you may have observed that the diminution of the suppurating cavity in the pleura is partly effected by the drawing in of the ribs, so that the affected side, which on her admission was larger than the sound side, will by-and-bye become much the least of the two, and that of course in proportion to the degree in which the lung is bound down and prevented from acting. [The cavity is now (June 7,) contracting slowly, and the patient improving.]

In this case, then, the rib was exposed, but promises to require no surgical interference. In other cases, however, of the same kind, the exposed bone may become much diseased. A man came under my care four years ago who had no less than three distinct openings in different situations into the pleural cavity, and a very considerable part of two ribs was dead, for two inches in length at least, which some one had wished to extract before his admission. His state of health, however, was not such as to make me perform this operation at that time, and probably the condition of the lungs has been followed by a fatal result since he left the hospital.

I have endeavoured, then, by this series of cases, to present to you a kind of consecutive history of the cases of diseased sternum and ribs which you may meet with, their progress being, I think, attended with a good deal of interest and importance.

[*Lancet*, June 20th, 1851.

CASE OF CARIES OF STERNUM AND RIBS. ABSCESS IN MEDIASTINUM.

THE next subject which I will bring before you is a case the exact counterpart of which I have never before seen, and to which I am anxious to call your attention, as the circumstance which makes it peculiar may perhaps shortly disappear. It is a case of abscess in the mediastinum connected with the sternum. The patient, Emma Sewell, was admitted on April 7th with lupus non excdens of the face, more especially of the alæ of the nose, which is the situation in which the disease most frequently appears. I will not occupy your time by entering into a consideration of this affection. She was just beginning to be put under treatment, when she was attacked with fever, and erysipelas of the head and face showed itself. It was not a very severe attack, however; for, three days after, it is reported as "not spreading," and on the following day, "redness and tumefaction almost disappeared." On the 23rd, it is noticed that the "lupus is about the same;" so that the erysipelas had not here, as it sometimes has in a most remarkable manner, the effect of healing the ulcerated surface. I have seen cancerous ulcers even, which had been open for years, heal up firmly and completely for many months under an attack of erysipelas.*

On the 24th we find she had "cough." On the 25th the notes are—"Pain in chest worse on inspiration; difficulty of breathing; rather more cough." On the 26th—"Cough more violent; no expectoration; tongue red

* This effect was afterwards produced on the lupus in this case, and she shortly afterwards left the hospital, better than for some years before.

at tip, loaded; pulse 112, fuller." I saw her on this day, and, there being a distressed and laboured action of the heart, and some crepitation being, I thought, perceptible over the præcordial region, made me suspect that there might be effusion there, and, consequently, she was placed under Dr. Nairne's care, who gave her some calomel and Dover's powder, with a saline draught, containing some Vin. Ant. Tart.

On the 30th it is noted—"An abscess over the central part of the sternum, about the size of a crown-piece, was opened; matter thin and bloody, with flakes of lymph. The probe passes *through* the sternum into the ant. mediastinum; no impulse on coughing; the quantity of pus is greater than the swelling indicated." There had been some tenderness complained of there before, but this was the first time the swelling was noticed.

Here, then, is a case in which an abscess formed and penetrated the sternum, so that a probe passed through the opening, grated against the bone on each side, and came in contact with the soft parts within the cavity of the chest. The bronchitis which appeared before the abscess was noticed, and became worse afterwards, depended probably upon irritation, caused by the abscess in the mediastinum.

On the 2nd, we find it noticed—"Crepitus to be felt between the manubrium and gladiolus." The thumb placed upon the upper and lower part of the opening produced a sensation of crepitus, which, had the disease occurred a few years later, would not have existed, for the abscess is probably situated in the cartilage connecting the first and second bones of the sternum, and it is against these bones that the probe grates in passing. Perhaps the crepitus I perceived in the first instance with the stethoscope was from this cause, but I examined the case very hastily, when I transferred her to the physician's care. Since then she has had great purulent expectoration, but her health is now improving, and the pus diminishing in quantity. Grating, is still to be felt, however, with the probe, especially on the right side, and it is not unlikely that a portion of bone there will exfoliate, the rest becoming permanently anchylosed to the manubrium. You will often see abscesses connected with the sternum, in consequence of the formation of venereal nodes, and occasionally in connection with scrofula and caries. After these cases have gone on for some time, they will frequently make an opening entirely through the bone, and you will see in most museums preparations of the sternum, with openings in them large enough to admit a finger. But cases similar to the one upstairs are not common; and it is not clear whether the abscess is simply of a scrofulous nature, or whether it is a recent collection of matter without any pre-existing disease; but it is most probable that it is an old formation, only greatly aggravated by the occurrence of the erysipelas, and not owing solely to the erysipelas, since it never came so low as the seat of the abscess. You will see a proposal made of trephining

the sternum in cases of abscess forming in the mediastinum. There is probably in these cases not sufficient evidence of the existence of matter in that situation to give grounds for such an operation; and, if the abscess have burst, nothing need be done so long as the pus comes away freely, as it does in our patient, otherwise the opening in the bone could easily be enlarged.

It is not uncommon to have similar abscesses form on the inside of a rib, and you saw an instance in a patient named Thomas Bennett, who was in Egremont Ward in February last, and who had a large abscess in the thorax in connection with the diseased rib. I did not in this case remove any of the bone, but I had a case a little more than a year ago, in which that proceeding was necessary. It was a boy, from whom I removed a portion of a rib anterior to the angle, in consequence of an abscess having formed of a similar description, the cavity being about four inches long, but without any disease of the lung, while Bennett was probably dying of phthisis, and also without any irritation and inflammation of the bronchi, such as was excited in Sewell by the abscess of the sternum.

[*Medical Gazette*, vol. v., new series, p. 62. July 2nd, 1847.

CASES OF
ABSCESS IN THE PELVIS FROM DISEASE OF THE BONES,
WITH CLINICAL REMARKS.

1. Diseased Sacrum and Ilium—Fæcal Abscess.—2. Diseased Hip and Tibia—Abscess bursting into the Bladder.—3. Diseased Sacrum—Paraplegic Symptoms.

Case I.—*Diseased Sacrum and Ilium—Fæcal Abscess.*

Elizabeth Bartholemew, æt. 28, admitted June 13th, 1832, under the care of Mr. Hawkins. She was confined about twelve months ago, but has not nursed her child, having been obliged to wean it when about six weeks old, on account of sore nipples. About nine months ago she had inflammation of the bowels, which required the application of leeches, and she subsequently suffered from cholera, by which illnesses her health suffered materially. About eight months ago she first experienced pain and tenderness in the left side of the abdomen and groin, followed in a fortnight by swelling; and, about five or six weeks after this, a puncture was made, by which she says two quarts of very offensive pus were evacuated. The discharge continued to be very fœtid for a few days, and then became more healthy, and the orifice is frequently quite closed. She has not menstruated since her confinement, but she says that at each menstrual period she has acute pain in the back, with bearing down, and pain in micturition, with frequent desire to make water; and at those periods the abscess discharges, for a few days,

a thin fluid unmixed with blood, and then heals up again. She says she has not become much worse in health since the abscess first opened, but is very thin and emaciated, and perspires much, and has a troublesome cough, with muco-purulent expectoration; she sleeps ill, has a bad appetite, and a quick weak pulse. There is no pain or tenderness in the back or loins, and she says she never feels any except at the supposed menstrual periods. Matter can be pressed down from the iliac fossa from a considerable sized cavity, through two openings on the front of the abdomen, near Poupart's ligament.

June 20th. — Some fæcal matter was observed to come through the openings.

July 17th.—This circumstance was again observed to-day.

July 26th.—She has much improved in health under a nourishing diet, with a small quantity of wine and porter, and the use of bark and quinine, with opiates to relieve her restlessness and cough, and once some chalk mixture, on account of diarrhœa. The openings into the abscess have been enlarged, so that the discharge has been free, and it has gradually diminished, as if the cavity was contracting, and she has had no pain since the bistoury was employed.

To-day the discharge has been more profuse, and mixed with fæces; and she has general pain and considerable tenderness over the whole abdomen, with rigours, succeeded by hot and dry skin, and a hard pulse, 120.

31st.—Some return of pain and tenderness, with more profuse discharge, and mixture of fæces; much perspiration and great debility. The openings in the groin, which had contracted, being again laid open, a considerable cavity was found to have formed in the hollow of the ilium and the outside of the hip.

August 23rd.—She has occasionally had the pain in the abdomen, which is relieved by fomentation, and her wine has not been intermitted. She has also again suffered once or twice from diarrhœa, requiring opiate enemata and chalk mixture occasionally. Her cough has been lately more troublesome, and the expectoration more copious.

September 3rd. —She has gradually got weaker, and has suffered much from irritation in the bowels, producing frequent diarrhœa. The abscess has lately discharged less pus, but frequently fæcal matter. Died this morning.

On passing a director from the wound, which was much contracted, it was found to lead directly upwards towards the spine; and on laying open the cavity of the abscess, which was reduced to a mere sinus, it was found to lead to exposed bone at the upper part of the sacrum, and the under surface of the body of the last lumbar vertebra, the cartilage of which at the posterior surface was softened, and a probe passed behind to the opposite side of the sacrum, which was also exposed and covered with a small quantity of pus.

From the general cavity, which occupied the substance of the psoas muscle, a sinus ran outwards in the substance of the iliacus internus, and a portion of carious bone, of the size of a shilling, was found at the centre of the crest of the ilium, but did not extend beyond. Inwardly the cavity extended over the linea ileopectinea for about an inch and a half, and here communicated with the sigmoid flexure of the colon (which was adherent to the cyst) by two small orifices, about large enough to admit the point of a common director. The intestines were collapsed and generally healthy, but a portion of ilium, six inches in length, was adherent to the side of the abscess at the margin of the pelvis; recent lymph was deposited on its outer surface, and the mucous membrane was highly inflamed and ulcerated in many places. The uterus was also adherent at this part.

The lungs were much diseased, having several vomicæ at the apex of each, and tubercles throughout their whole substance.

Case II.—*Diseased Hip and Tibia—Abscess bursting into the Bladder.*

Geo. Farrow, æt. 15, admitted July 5th, under the care of Mr. Hawkins. He is a weak scrofulous lad, who has been constantly in ill health. About ten weeks before his admission, he had a violent cold, with fever, and an abscess formed over the right tibia, which, when opened, was found to be connected with dead bone; and a few days before his admission a fresh abscess formed in the calf of the leg, with much inflammation, in consequence of the matter from the back of the tibia not being able to escape, two-thirds of the circumference of the bone being dead. He has also complained, for the last three or four weeks, of much pain about the hip of the same side, and has had an issue behind the trochanter, which has been allowed to heal, in consequence of the irritation it excited. On admission, the openings over the tibia were discharging freely, and there was some swelling apparently connected with the femur rather than the hip-joint, which extended some way down the bone.

July 31st.—Health much improved. Very little thickening about the femur, and the pain is nearly gone. The ulcers on the leg are also healthy, and much contracted in size, and the exposed bone separating.

August 12th.—The wound in the leg is sloughing rapidly, with violent pain.

17th.—Sloughing stopped. Pain ceased.

28th.—Swelling and pain in the right groin, where a gland is felt enlarged and tender.

September 4th.—Since the last note, it was evident that the pain in the groin depended on deep abscess, which has been fomented. He has had a good deal of anxiety and fever, much pain and tenderness in the thigh,

which is swelled to half its length, though no matter is perceptible to the touch, and he complains of his water scalding him.

5th.—Yesterday afternoon the pain ceased, and he felt a sudden desire to make water, and discharged a considerable quantity of pus *from the bladder;* in the course of three or four hours, probably about two pints having been evacuated: the portion first discharged being dark-coloured, but the rest becoming subsequently white and healthy in appearance.

11th.—Pain and swelling in the thigh much lessened, and his health is somewhat improved, but there is still a good deal of swelling and much tenderness in the groin and lower part of the abdomen on pressure. The water continues mixed with a great deal of healthy pus, which is discharged rather frequently, but without pain or inconvenience. Once or twice the water has been clear, and he thought the pain was increased by this apparent want of free communication between the abscess and the bladder. No fluid can be felt in the thigh.

20th.—Going on well, the abscess continuing to discharge by the bladder.

CASE III.—*Diseased Sacrum—Paraplegic Symptoms.*

Jane Elwood, æt. 26, admitted August 1st, 1832, under the care of Mr. Hawkins.

Ten or twelve years ago she fell against a stool and struck the sacrum, to which a blister was applied. About two months afterwards an abscess formed at the side of the sacrum, and some dead bone has come away since. She has been twice pregnant, and each time the abscess burst open again after having been healed. It has now continued open a considerable time, and a small piece of dead bone is felt at the bottom of the sinus. About two months ago, a fresh abscess formed over the posterior part of the right ilium, which is now of large size. Since this has formed, she has become almost completely paralytic in the lower extremities, especially in the left, which was always weak, and she has had paralysis of the bladder and rectum, so that both the urine and the fæces are discharged involuntarily. Her health is much impaired, and she is much emaciated.

August 3rd.—The abscess was opened, and above a pint of pus evacuated.

22nd.—Improving; although another smaller abscess has burst in the loins.

September 1st.—Both abscesses healed up. She has regained much flesh and strength, and is able to sit up regularly. She can use her legs so as to walk with the assistance of another person, and the bladder and rectum are recovering their power, so that she can retain all but very fluid evacuations, and can hold the water for several hours, with perfect power of expulsion.

20th.—Nearly well.

Clinical Observations.

There are several cases of abscess about the pelvis which have been recently under your observation, which I will take as the foundation for a few remarks, as they are by no means infrequent, and are sometimes obscure and difficult to manage. In one patient, who died a few days since, you have observed an opening in front of the abdomen discharging fæces: would you look for the cause of such an occurrence in the sacrum? There is a second patient, under Mr. Keate's care, who has had an abscess opened in nearly the same situation, at the side of the abdomen, from which a piece of the os pubis has come away. In a third, a lad has had scalding in making water, with purulent discharge from the bladder; the cause of which is not in the bladder or kidney, but in disease of the thigh-bone or hip-joint. Here, again, are some preparations, in which abscesses connected with the hip have made their way into the pelvis in other directions. In short, the causes of these abscesses may be so numerous, and their course so varied and extraordinary, as sometimes to render them very puzzling and complicated. In Farrow's case, the cause was clearly in the thigh-bone, in a very scrofulous subject.—[The notes of the case which we have narrated were here referred to.]—But let us take the case of Bartholemew more in detail, which has shown you the necessity of careful examination to ascertain the cause of such an abscess.—[Mr. H. here read some notes of her history at the time of admission.]

Now a large abscess in the iliac fossa, or extensive sinuses in the groin or lower part of the abdomen, in which the probe may be buried, naturally lead one, in the first instance, to suspect psoas abscess, depending on diseased spine. The most careful examination, however, could not detect any tenderness in any part of the back or loins, nor any sensibility to the impression of a hot sponge, which sometimes discovers disease of the vertebral column when mere manual examination fails to do so. She had met with no accident, and expressly denied having any pain in the back, except periodically, which she herself attributed to menstruation. But if there was no disease of the spine, might it be a simple abscess in the cellular membrane of the psoas and iliac muscles; or might it be an abscess connected with some disease of the ovarium? I saw a patient formerly, at the Asylum, with Dr. Seymour, when we were colleagues at that institution, who had a large abscess in the ovarium, which burst and discharged by the vagina; subsequent to which she was admitted, under our joint care, into this hospital since we have been colleagues here also: the abscess having now ulcerated both into the colon and the bladder, so that part of her urine, and the fluid part of the fæces, with flatus, came through sinuses in the groin resembling those of Bartholemew, and she was always worse at the periods of menstrua-

tion, when the discharge used to be coloured, no doubt by communication with the vagina. I recollect another woman also, when I was house-surgeon here, who used to menstruate regularly through the abdomen; in whom the bones of an extra-uterine fœtus were evacuated by abscess several years after conception. Now Bartholemew also said that the abscess used to reopen, with much pain, at each period that she ought to have menstruated, though the discharge was not red, but thin, neither was it per vaginam. In a few days, however, further light seemed to be thrown on her case, for some fæces were found to come away by the openings; which circumstance, combined with her history of cholera and inflammation of the bowels before the formation of the abscess, and the very fœtid quality of the matter evacuated at that time, seemed to make it most probable that the abscess depended on ulceration of the sigmoid flexure of the colon. It is true a fæcal abscess forms most frequently on the right side, from lodgment of fæces or foreign bodies in the cæcum, but they may occur in other situations also; and you may perhaps recollect a man who was under my care not long since, with an abscess in the umbilicus, which, from the smell and colour of the discharge, I have no doubt communicated with the arch of the colon, though fortunately I had no opportunity of verifying the fact, as the man got well.

On whatever cause, however, the disease depended, the treatment was clear; the indications being to prevent accumulation of matter by giving it a free exit, and to support her strength by medicine and diet, although from the apprehended state of her chest and her great debility, the chances were much against her recovery. At first, indeed, she improved very much, but observe the remainder of her case. [Mr. Hawkins here referred to the case-book for the detail before given.]

Now you will observe, from this case, that the neighbourhood of an abscess to the intestines is not unattended with dangers which are not usually anticipated from a psoas abscess. The intestines (both the colon and the small intestine) adhered to the side of the abscess—both were inflamed—both were ulcerated in the interior, and the colon was even ulcerated through all its coats, making an artificial anus of a dangerous and nearly hopeless kind. You will observe also, that ulceration once excited, your remedial means are constantly counteracted, repeated attacks of diarrhœa destroy your patient's strength as fast or faster than you restore it, and they frequently sink under the disease from this cause only. But this is not all—there is danger also of general peritonitis; especially of that low and fatal kind which so often occurs in debilitated persons. You observe here some lymph on the small intestine, which was adherent to the abscess, but it was merely local, and was not severe enough even to require leeches more than once; so that, in fact, I considered her in greater danger from diarrhœa and irritation of the mucous membrane, than from peritonitis, and treated her

accordingly, endeavouring to quiet this irritation while I supported her general strength. Take care, however, not to mistake the apparent debility arising from inflammation of the peritoneum for real weakness. A man was under my care with an abscess between the external and internal oblique muscles, which I opened. This man was carried off in about forty-eight hours by extensive peritonitis, and I found, on seeing him after, that on the first accession of the inflammation, wine had been ordered for the apparently sudden debility.

We found then that the cause of her abscess was disease of the front of the sacrum, and the junction of this bone with the last lumbar vertebra, the matter making its way along the psoas muscle; and this is a common course when the disease is on the inside of the bone. But it may proceed in other directions. Here is the os coccygis of a patient of mine, which I removed by operation, together with part of the sacrum. He was admitted into the hospital, with a fistula by the side of the anus, for operation, but of course, on finding that the probe touched the sacrum high up in the pelvis, the operation was not performed. I was enabled to make an opening behind the sacrum (where the rectum had been opened by ulceration), and afterwards removed this bone; the consequence of which was that the fistula was cured. A boy was under my care with a sinus behind the upper part of the sacrum, for which I could find no diseased bone or other cause; but after some little time, upon making an extensive incision of the sinus through the gluteus muscle, by the side of the sciatic nerve, I discovered that the opening led up again, at an acute angle, through the sciatic notch into the interior of the pelvis; the whole of the inner surface of the sacrum being carious or dead. Sometimes the abscesses from diseased sacrum proceed in several directions, even on both sides of the body at the same time. If, again, the posterior part of the sacrum be the seat of the disease, the abscesses will be over the bone itself, or on the posterior surface of the ilium, or in the loins, as you see in Elwood's case. This patient has also another set of symptoms, which Bartholemew did not suffer from, and which are more rare. [Mr. Hawkins here mentioned the particulars of her case, showing the occurrence of paraplegic symptoms.]

Next, as to the treatment of such cases of abscesses from any cause about the pelvis.

1st. Is there an abscess not yet opened? If the skin is getting thin—if the patient is suffering much irritation from the formation of matter, and especially if he has the peculiar symptoms of a *foul abscess—i.e.*, one containing sulphuretted hydrogen, either from diseased bone or fæcal abscess, or sloughs, let out the matter as soon as possible. You saw how immediately Elwood was relieved by this means, and how much less Farrow has suffered since the pus came away through the bladder than when it was confined

among inflamed parts. You lessen also the danger of peritonitis by taking off the tension of the abscess. A poor little chimney-sweep was mounting a donkey, when he fell off, and trying to get up again he fell over on the other side, and hurt himself considerably on the hip. Three weeks afterwards, he was admitted into the hospital extremely emaciated, and with high irritative fever. During the first few days I could not ascertain the exact cause of his sufferings, and during that time he was repeatedly threatened with peritonitis, which required leeches and other measures. Then I discovered fluctuation over the front of the iliac region, and making an incision through the linea semilunaris, some way above Poupart's ligament, I let out a few ounces of pus from between the peritoneum and the transversalis muscle, the finger passing behind the rectus muscle on one side, and into the iliac fossa on the other side, within the abscess. From this time there was not the least sickness, or tenderness, or tension of the abdomen, and he got rapidly well.

Or 2ndly, Is the abscess already open, but the openings not sufficiently large to allow a free exit to the pus?—Then enlarge these openings, or make another, if possible, still nearer to the seat of the disease. You saw how much Bartholemew was relieved by this incision two or three times, and at the time of her death the abscess had contracted to a mere sinus, and, but for the diseased bone at the bottom, such a sinus may altogether fill up. It may do so even when some disease still remains, as in Elwood's case, whom I do not consider permanently cured, though all the openings are at present closed. I should wish, if I have an opportunity, to make a counter opening in Farrow's thigh, to prevent the pus entering the bladder, but I do not at present feel sufficiently positive of the situation of the abscess to do so, though I suppose it is in contact with a considerable part of the femur.

3rdly. A third indication is to relieve irritation by opiates, and to support the patient's strength by proper food, by bark or quinine, and other means which I need not enumerate. Even where the abscess depends on diseased bone, and the bone is not accessible, constitutional means alone will sometimes effect a cure. A young woman called at my house a few days ago perfectly well, who was formerly under my care with disease either of the ilium or sacrum, who had two sinuses in the groin like Bartholemew's, one in the course of the psoas muscle, the other leading deep into the pelvis, and communicating apparently with the vagina, as pus had escaped in that direction, and who had abscesses also in the lower part of the loins, where I felt diseased bone at some depth.

4thly. Is the bone carious or ulcerated, but not dead?—If accessible and superficial, stimulating applications, especially of nitric or muriatic acid, certainly assist in restoring a healthy action in the vessels of the part, while you attend to the more important object of altering the state of the con-

stitution, and under their use the ulcer may heal, or some portion may exfoliate, and the surface below become healthy. If not accessible, as for instance, when on the inside of the sacrum, as in Bartholemew's case, something may no doubt be done at the proper period by blisters and counter-irritants, in the same way as you know that caries of the vertebræ is often checked by their employment; some benefit might perhaps have been obtained if a caustic issue had been made early in the case of Bartholemew. But unfortunately, in general, the insidious nature of the early symptoms prevents the early recognition of the disease, and counter-irritation has less power in diminishing suppuration than it has in preventing its occurrence; besides which, issues have less power over scrofulous disease of bones than over ulceration of the cartilages of joints. The issue did no good, for instance, for Farrow's disease of the thigh bone, and they do little for caries of the sacrum or innominatum.

5thly. Is there some dead bone, separated, or in progress of exfoliation?—Much more good can be done, than is usually imagined, in these cases, by the same treatment which you so often see employed in this hospital in necrosis of the long bones. In Mr. Keate's case, a considerable portion of the pubes has spontaneously separated, but this is generally a very tedious and slow process if left entirely to nature, and you can hasten the cure by laying open the dead bone, and extracting it with the forceps or bone nippers. An old soldier, whom I have twice operated on for strangulated hernia, received a musket wound at the siege of Badajoz, the ball passing through the side of the abdomen, through the ilium, and out again at the back of the thigh; the wound had remained open ever since, discharging so copiously, and exciting so much irritation, as frequently to incapacitate him for active exertion. I cut down to the bone, through the glutei muscles, and removed a portion of loose bone, and cut off some soft carious bone with a chisel, leaving an opening which allowed several fingers to pass through it into the iliac fossa. The wound, which had remained open for nineteen years, healed quickly, and has continued sound ever since. I recollect a patient of Mr. Brodie's, from whom a considerable portion of the tuberosity and ramus of the ischium was removed by an incision through the adductor muscles. Here, again, is the os coccygis of another patient, which I removed by operation, with relief of the same kind.

There are only two other circumstances connected with abscesses about the pelvis which our time will allow me to allude to. The first is the frequent occurrence of phthisis, in conjunction with large abscesses, in this situation, which you have witnessed in Bartholemew's case. The coincidence is very common, and renders it necessary to give a guarded prognosis, even in cases where the local condition seems tolerably favourable. It may be that tubercles in the lungs dispose a person to have abscesses formed

in the pelvis, for the same reason that a phthisical state of the lungs so frequently occasions piles and fistulæ in ano ; the alteration, namely, of the circulation in the extremities of the vena portæ, owing to the mechanical obstruction in the lungs ; or else it arises from the debilitated condition of the patient, which calls into activity any latent disposition to disease in the lungs.

The other circumstance is this—you see that a portion of the ilium, out of the course of the psoas abscess, was exposed and dead in this poor woman, and this is, in fact, frequently found to be a consequence of large abscesses ; so that a person with disease in the spine frequently has caries established in another part of the spine, or in one of the bones of the pelvis, from the mere contact of matter. This serves to show you the propriety of opening even chronic abscesses tolerably early, lest the addition of dead bone in another situation render the case more complicated, and the cure more uncertain.

[*Medical Gazette*, vol. x., p. 817, September 29, 1832.

CASES OF CANCEROUS OR MALIGNANT DISEASE OF THE SPINAL COLUMN,

WITH REMARKS.

Read February 23rd, 1841.

The Transactions of the Society contain several cases in which the bones were observed to have become softened, with a deposit of cancerous structure in their interior, so as to break from trifling causes, after having been in most instances affected by pain of a more or less severe character resembling rheumatism.* The neck of the thigh bone has been most observed, when in this morbid condition, but other bones also are liable to be so affected, and among them, those of the spinal column. There are, however, so few well-described examples on record, of cancer or other forms of malignant disease of this important part, that some account of the four following cases may perhaps be not without value.

Case I.—Sophia Green, æt. 39, was admitted into St. George's Hospital, May 7th, 1834, under my care, having enjoyed good health till very recently, when several months' anxiety and fatigue in nursing her husband, who died a few days before her admission, had a good deal affected her ; and during that time a cancerous tumour of one breast, which had been first observed two years previously, had rapidly increased. It was now ulcerated and very

* Med.-Chir. Trans., vol. xv., 186, xvii., 56.

painful, with retracted nipple, and thickened skin, and the glands in the axilla and above the clavicle were enlarged, and very hard. She complained, however, quite as much of pain in the neck, which had begun about two months previously, the pain being in the cervical vertebræ chiefly, whence it extended round the neck and over the scalp, and all these parts were very tender to the touch. She had also a little difficulty and pain in swallowing, and was unable to move her head in any manner without great exertion, and the effort gave her considerable pain. Supporting her head and neck on the right side, as she lay in bed, was very painful, but she could not lie on the left side at all; probably some stretching of the parts being occasioned by the weight of her head on the pillow. If she tried to change her position, it was done by first putting both her hands to her head to support it; and pressing the head downwards by the hand occasioned much suffering. The centre of the neck appeared a little sunk forwards, as if the upper vertebræ had been depressed in that position.

The tenderness of the scalp was nearly removed by some small doses of colchicum and opium, and the pain in the vertebræ was somewhat lessened by a blister, but the symptoms just mentioned continued more or less till her death.

In the early part of June an immense number of cancerous tubercles formed in the skin around the breast, covering much of the abdomen, and thorax, and shoulder; and in the latter situation many of them had coalesced, so as to form a hard mass of considerable size. About the same time she began to suffer from obstinate constipation, with frequent vomiting, which continued for nearly the last six weeks of her life, and appeared to arise from a mechanical cause. During this time the breast ulcerated and sloughed extensively, till she was released from her sufferings on the 16th of July.

The breast and pectoral muscles, and cellular texture, formed a large mass of scirrhous tumour, which at one part reached to the intercostal muscles, and a central slough had contaminated the ribs also, two of which were softened by absorption of their earthy substance, and filling of the cells with bloody pulp, so as easily to allow of their being bent or cut. The cutaneous tubercles, and absorbent glands, and the fat surrounding them, were evidently of cancerous structure, and one of the glands contained some bloody purulent fluid. The body of the fifth cervical vertebra was very irregular on its surface, and was softened throughout with much enlargement of the cells of the cancelli, which were filled with a sanguineous pulpy fluid: the two adjoining vertebræ showed a lesser degree of the same morbid structure. The uterus was healthy, but both Fallopian tubes were much dilated, and contained a thick brownish fluid; the ovaria formed two tumours of the size of an orange, and contained several cysts, the larger of

which were filled by transparent fluid, the others by an opaque semi-fluid substance. These ovarian tumours were the immediate cause of death, as they filled the pelvis in such a manner as to obstruct the rectum, which lay in the angle between them, upon the sacrum ; and their nature was probably malignant, as several of the lumbar glands were enlarged and pulpy.

In this case the cancerous change of structure was in an early stage, affecting only the cancellous texture, or nearly so, and influencing slightly the adjacent nerves ; but not forming any tumour, and causing no alteration in the functions of the spinal marrow. The next case illustrates the further progress of the disease.

Case II.—Jane Hall, æt. 55, was admitted into St. George's Hospital for paraplegia, and remained under the care of Dr. Wilson for two months, after which she was transferred to my charge, at the end of November, 1839. It appeared that the right breast had been removed six years previously for cancer, I believe by Mr. Mayo, in the Middlesex Hospital, and the part had remained well till May of the present year, at which time some cancerous tubercles were formed in and around the cicatrix, and one or two glands became enlarged and hard in the axilla. She experienced pain in both these parts, occasionally severe, but they did not ulcerate, or undergo any material change during her life ; the spine and the parts below it being the seat of her sufferings, and the cause of her death.

About March last (that is, nearly two months before the return of the cancer in the skin and glands), she began to suffer much pain in the back, chiefly in the dorsal region, and in May she experienced some pricking sensations in the feet, soon followed by numbness and loss of sensation, and in a short time by loss of power over the muscles of the lower limbs, which nearly at the same time became affected by involuntary contractions ; in July the bladder and rectum also became paralyzed.

In November, when she became my patient, one spinous process in the back was just enough prominent to be fixed upon as the seat of the disease, but by degrees it projected so as to form an acute angle, with a considerable curve above and below it, the vertebræ being bowed forward somewhat in a semi-circular form. She complained of constant and acute pain along nearly the whole spine, but especially at the angle formed by the sixth dorsal vertebra, and the pain was much increased by pressure about this part, or anywhere below it, and for a little way above that bone. The angle appeared to arise from loss of substance in the body of the vertebræ, without any apparent swelling around it. The only other local circumstance to be noticed was that I sometimes thought I could feel a hard tumour in the abdomen, but in consequence of the extreme tension and hardness of the abdominal muscles, excited by any examination, it was difficult to be certain

of the fact; it will appear probable, however, that the diseased state of the omentum, subsequently described, had really been thus felt.

Below the affected part of the spine all the functions of the spinal marrow were materially impaired, or to use her own expression when attempting to sit up, "she felt as if she was about to drop into two parts." The physiology of the spinal marrow was therefore so well illustrated by the following interesting pathological symptoms, that perhaps an account in detail may be justified, in a case where the structure of the medulla was wholly unaffected.

First, with regard to *muscular power*. This faculty was totally lost, as to the will, in every muscle of the limbs, or loins, or abdomen, as well as in the sphincters of the bladder and rectum; but many of them were in an almost constant state of tonic spasm, while there were also occasionally convulsive or clonic spasms in the same or other muscles of the limbs and abdomen. Thus the abdominal muscles were so permanently contracted as to curve the body forwards, and present rigid masses to the fingers, the pressure of which increased their hardness, and painful spasms took place also in them, either by themselves, or at the same time that the limbs were contracted. The hips and knees were almost always in a bent position, the thighs nearly in contact with the abdomen, and the heels nearly upon the nates, but the limbs also jumped a good deal, particularly at night. The feet and legs did not much participate in this tonic spasm, nor in the occasional convulsions, and their muscles did not act nearly so much from external impressions, such as pressure, or pinching any part of the limbs, or tickling the soles of the feet, which readily excited the actions of the muscles of the hips and knees. The tonic action of the limbs was trifling, so that they could be elongated with very little resistance, and would lie flaccid for a few seconds, after which they would suddenly be drawn up again, and every movement of this kind was accompanied by the most excruciating pain. For about a fortnight on one occasion she was much relieved by having the limbs kept in the extended position by fastening the feet to the foot of the bed, but the spasms which then took place in this new posture became worse than those before experienced, so that she was allowed to have them again at liberty.

The loss of power over the sphincter ani generally caused an involuntary escape of fæces, without consciousness of their passage; the bowel itself was usually weak in its expulsive power also, but now and then there was less constipation, so that, even as late as March, she was sensible of an inclination to empty the rectum, and could voluntarily call its muscular power into action to expel its contents, the sphincter being at the same time paralyzed, with insensibility to the discharge.

The sphincter of the bladder was paralyzed, so that there was invariably an incontinence of urine, but the detrusor never lost its power, so that there was no partial retention, as is so often the case in paralysis. She was at the

same time wholly unconscious of the escape of the urine, and had no voluntary power over the detrusor, such as was just remarked to have been sometimes present in the coats of the rectum.

Secondly, the *sensibility* to external impressions was entirely lost in every part below the back, so that she could not feel smart pinching or pricking, or heat or cold, in any part, and was also (as was just remarked) destitute of sensibility about the two outlets of the bowel and bladder. Sometimes she thought she felt a little when pinched in the thighs, but I believe it was only when muscular action was excited by the stimulus. But though destitute of common sensibility, violent pain was caused in every part by spasm, either spontaneous or excited, and she felt severe pain occasionally in the limbs, when no contraction was present, but still more in the abdomen, the pain in which was said to be an agonizing and burning pain, and was almost always complained of, and perhaps depended partly on the morbid changes of the internal parts, which are less dependent than the parietes for their sensation on the nerves passing to them from the spine below the seat of the disease.

The acute pain thus experienced below where the spinal marrow was nearly deprived of its functions is often called *increased sensibility*, for example, by Dr. Abercrombie, and MM. Serres and Ollivier, in speaking of this subject; but the parts thus painful being utterly destitute of common sensation, the expression seems to me to be an erroneous one for such acute morbid impressions.

Thirdly, the *temperature* of every part below the disease appeared to be permanently higher than the upper half of the body; the difference being about four degrees between any two parts, that appeared fairly comparable with each other, after allowing for the warmth of clothing and other circumstances.

Fourthly, the *secreting* properties of the intestines and kidneys were rendered morbid, so that besides the constipation and involuntary escape of fæces from want of muscular power, the evacuations were almost always very fœtid and offensive, and generally dark coloured, though in some measure under the influence of mercury; and the secretion of urine was permanently alkaline. This fluid was, however, pale and clear, and free from mucus or albumen, so that it was not alkaline enough to irritate the mucous membranes of the bladder and kidneys; nor could it be said (as is generally supposed with regard to the alkalescence of the urine after injuries of the spine), that the urine became alkaline because mucus was secreted by the urinary surfaces, since the urine was, in this case, always alkaline, though without mucus.

Lastly, the circulation and nutrition of the parts below the disease of the spine were impaired in the manner usually observed in injuries or diseases of

the spine, so that there was from the beginning of 1839 a disposition to the formation of sloughs over the trochanters and sacrum, or in any part in which pressure was made, together with œdema of the legs, and the appearance of bullæ on the skin.

With such symptoms as these connected with the spinal marrow, sometimes a little remitting in severity, but on the whole advancing, this patient lingered on till June 17th, 1839, when the mortification became very extensive on the hips and nates, and was the immediate cause of death, as is usual where the spinal functions are wholly lost or seriously impaired.

It is unnecessary to dwell on what was done to alleviate an evidently fatal malady, but it may be as well to mention that what appeared to afford most relief was an occasional blister to the spine, or a belladonna or opium plaster, and sometimes dry cupping along the back, together with opium frictions on the painfully-contracted abdomen and limbs; and stimulants to the parts whose vitality was much lowered, so as to inflame and slough; with different narcotics internally, particularly the bimeconate and acetate of morphia.

On examination of the spine by removing the spinous processes, all the vertebræ were found to be unusually soft and vascular, and there were seen in the section of several of the dorsal vertebræ spots or tubercles of yellowish white substance, similar to that found in larger quantities in their bodies. On opening the sheath of the spinal marrow, a little clear water was seen below the arachnoid membrane, but the whole medulla was of its natural colour and consistence, and presented no appearance whatever of inflammation. Opposite to the sixth dorsal vertebra it had been pressed upon by a tumour projecting from the body of the bone, so that a deep sulcus of the entire circle was formed, in which so little medullary matter was left that the central part was almost transparent: the part thus pressed upon was full half an inch in length, though it has contracted by spirit in the preparation.* Even in this point, however, there appeared to have been no inflammation whatever.

Opposite to this part some firm structure without bone projected from the body of the sixth dorsal vertebra in the form of four oval prominences, so as to encroach considerably on the canal; three of these were covered by the dura mater in firm union with the morbid growth, but over the other an opening was formed in the membrane with smooth edges, through which the new growth appeared, the opening being the result of simple absorption without any ulceration. On making the section of the vertebræ seen in the preparation, the morbid growth was found to proceed from these vertebræ, the sixth or central one being most altered in shape, though all three of

* The preparations illustrating these cases, which were shown at the Society, are in the Hospital collection at St. George's Hospital.

their bodies were almost entirely converted into a cancerous substance; the sixth having spread out posteriorly, while it was much compressed in front, the fifth and seventh vertebræ almost coming in contact, an acute angle was thus produced, which made the spinous process of the sixth so prominent during life. The projection into the canal was about half an inch beyond the line of those vertebræ which had no external growth; in several of the other vertebræ, however, cancerous substance had been deposited in the form of tubercles in their cancelli. The new growth was firm, with fibrous structure of a white appearance in bands, with some yellow softer substance in the interstices. Many of the other bones of the body, and the other parts of those in which the cancerous tubercles were seen, were softer and more vascular, and with larger cells than usual, with reddish pulp in their cancelli.

The lungs were healthy, but the pleuræ were everywhere closely adherent, so as to form a thick layer of very hard substance, which had more the appearance of cancerous membranes than of simply inflamed pleuræ.

The abdomen contained a small quantity of serum, and almost the whole of the peritoneum was covered by small cancerous tubercles, in no part going into any viscus; they were hard and close set, of the size of grains of wheat, but a few were a little larger. They were most numerous on the diaphragm and small intestines, and many parts of the bowels were matted together by adhesion of these tubercles, especially about the head of the colon and the ileum. The omentum was changed into a hard scirrhous band about an inch broad, and half an inch thick.

The peritoneal surface of the uterus and adjoining parts was much altered by the tubercular deposit, and in the body of the uterus was embedded a small cancerous tumour the size of a pea.

The axillary glands were of well-marked scirrhous character, with bands going far into the surrounding fat; the cancerous cicatrix and cutaneous tubercles did not affect the muscles below them.

These two cases appear to have been good examples of cancer occurring secondarily in the bones of the spine, and seem to show pretty fairly two different stages of the disease.

I am only acquainted with three recorded cases of cancer or scirrhus, as distinguished from the medullary and fungous varieties of malignant disease. Two of these are briefly alluded to in the published lectures of that distinguished ornament of this Society and of our profession, whose loss we have so recently had reason to deplore.* In one of them scirrhous tubercles were found in the cancelli of several vertebræ after agonizing pains in the back;

* Sir A. Cooper's Lectures, small edit. p. 349.

—in the other, it is remarked that tubercles were found adherent to the spine, I presume not in the interior; the spine is also said to have been distorted, and to have caused more suffering than the disease of the breasts. Both these cases therefore resemble the first which I have described: there is, however, a third case which has been published by our president,* in which, as in my second case, the spinal marrow was implicated. In all the five instances cancer of the breast was the primary disease.

In Sir B. Brodie's case several vertebræ were converted into a gristly substance possessing considerable vascularity, without earthy matter, and the whole of the lower part of the theca vertebralis was filled with serous fluid. The effects upon the spinal marrow were in many respects different to my case, the lady being suddenly seized, two months before her death, with paraplegia and loss of sensibility below the back, without appearing to have had preceding pain; nor is pain mentioned as having afterwards been present. She was subject, as Halls was, to involuntary convulsive movements, but these also were unattended with pain; the patient only complaining that it was disagreeable to see them. The urine in this patient, after being at first clear and natural, became ammoniacal as in Halls, but was also loaded with offensive mucus, and deposited phosphate of lime; and there was the inflammation and dilatation of the urinary organs usually present when the spinal marrow is seriously affected, but from which latter effects my patient was free. As a diagnostic sign of cancer of the spine, acute pain cannot therefore be regarded as *invariably* present, but in all the other four cases it appears to have been most excruciating; I never saw evidence in any other disease of the spine of such exquisite suffering as in my two cases; and as pains have generally been noticed as having preceded fracture of the femur or other bones, when affected with cancer, the practical inference may perhaps be legitimately drawn, that rheumatic pains much complained of in the spine, should usually contraindicate the performance of an operation for cancer of the breast or other organ. In Green's case the acuteness of the pain and tenderness, and the manner in which certain nerves of the head, throat, and neck were affected, enabled me some months before her death to anticipate cancer in the vertebræ; and in Halls' case also, the same circumstances, together with the degree, and in some measure the peculiar manner in which the functions of the spinal marrow were interfered with, left no doubt in my mind of there being cancer, although the angular curve made the local appearance not unlike that of caries. The angle was quite acute enough for considerable loss of substance, but the vertebræ above and below the projecting spinous process were a little more curved forwards than is usual in caries, which a little assisted the diagnosis;

* Brodie on Diseases of the Joints, p. 283.

this circumstance arising perhaps from the softening of the bones, or partly also from paralysis of the posterior spinal muscles.

I could not indeed tell that there might not also be some alteration of structure in the spinal marrow or its membranes, besides that of the bones (which was rendered certain by the acute angle of the spinous process), since the symptoms connected with the medulla were such as might be occasioned by any cause that interrupted the communication of the lower half of the body with the sensorium, whether situated within the spinal marrow, or external to it.

Of the treatment of an evidently incurable disease in both cases, it is unnecessary to say more than has already been done.

In all these cases the malignant disease of the spine was secondary to cancer of the breast, and there seems to be no doubt, from general testimony, that although medullary and fungous tumours not unfrequently originate in bone, ordinary cancer or scirrhus on the other hand is at least very rare without preceding cancer of some other tissue. The following case affords an instance of *primary malignant disease* of the spine, which corresponded much more with cancer, in the appearance and symptoms, than with medullary tumour.

Case III.—The subject of this case was a gentleman, 74 years of age, who came to town in August last, and was for a few days under Sir Benjamin Brodie's care, after which he was chiefly under the charge of Mr. Keate, with whom I saw him, and in his absence from town I attended to him, and also examined the disease after death. I am indebted to both my colleagues for permission to make use of their observations of the case in addition to what I learnt myself from the patient.

This gentleman, after sitting near an open window in cold weather, in the spring of 1840, began to feel pain on the left side of the neck, extending from the head to the shoulder, with numbness of the left side of the head. The pain was like that of rheumatism, and never subsided after its first appearance, and in about a month was succeeded by a swelling on the left side of the neck. Both pain and swelling increased, and in July, about four months from its commencement, the pain became more severe and burning, and both pain and swelling extended to the right side of the neck. When he came to town at the end of August, the pain was most severe on the right side, where a spot of the size of half-a-crown, about the middle of the neck, near the vertebræ, was affected with most excruciating pain; the pain everywhere was severe, but he said he could bear the rest tolerably well, if this part was relieved. I saw him first after he had been nearly three weeks under treatment (mercury and iodide of potassium, with leeches and cold lotions,

chiefly), by which some diminution of the swelling and of the pain was effected.

In the back of the neck was a good deal of swelling, of a firm elastic character, appearing to be below the muscles. but now and then giving an obscure sense of deep fluctuation; the swelling on the left side of the spine reached from the head to the level of the fifth cervical vertebra, and on the right was opposite only to the second and third bones, projecting chiefly at the sides, so as to leave the sulcus of the spinous processes in some measure perceptible. This swelling was very tender, as well as painful, without adhesion to the skin, or alteration of its colour. Every attempt to move occasioned very great suffering, so that it was difficult for him to find a tolerably comfortable position for the head to lie on a pillow; no movement whatever was performed, but by the head with the whole body, and any attempt forcibly to rotate the neck could not be borne for an instant; pressure on the head downwards produced also much increase of suffering. The pain was constant, but liable to occasional increase, it prevented sleep, and required the free use of opiates.

The tumour at one time lost perhaps a third of its bulk, but this subsequently varied, in consequence of occasional attacks of increased pain and swelling, as if suppuration threatened, and this chiefly on the left side. A blister and an iodine lotion appeared somewhat to increase the tumour, and although it never returned to its former size entirely, yet the pain latterly was almost as severe as ever.

After his journey to town in August, he felt for a day or two a tremulous action of the muscles on the fore part of the thighs, but this did not return. About three weeks, however, before his death, his left arm became nearly paralyzed, and the power over the left leg was slightly impaired, his senses being the whole time perfect.

During most of the time the general health was little disturbed, but latterly he suffered a good deal from salivation, and became thinner and weaker, and thought himself in danger, and during the last three weeks, in the last of which he had severe diarrhœa, his strength gradually failed, in consequence of which Dr. Seymour was consulted, who was present at the examination on the 25th of October, in which I was assisted by Mr. Prescott Hewett.

The swelling was composed of a firm solid tumour, which occupied the place of the third cervical vertebra, and in part the second also, with a considerable portion of the adjacent ligamentous, tendinous and muscular substance, the distinction between what had been of osseous, and what of soft structure, not being clearly perceptible. The new structure occupied the whole of the arches and processes of the vertebræ, and in part their bodies

also, so that scarcely any part remained osseous except the processus dentatus, which was by the softening of its base so moveable, that there must have been some risk during life, of its being torn away from its attachment. Some of the new structure had encroached on the vertebral canal on the left side, between the dura mater and the first and fourth vertebræ, the tumour adhering slightly to the membrane; and within it was a good deal of thin serum, but the medulla itself was not unusually vascular. The brain also was healthy, with the exception of some serum effused under the arachnoid of the cerebrum.

The tumour was white and lardaceous in appearance, and softest in the centre, where the bone originally existed, which part was also more vascular than the outer part, which had been formed by the soft tissue around the vertebræ; on the left side, where the natural texture of the muscles began to be evident in union with the morbid growth, was a small quantity of dark bloody pus. In the liver, which was otherwise healthy, were two tubercles of the same white texture as the tumour, but a little firmer, and less lardaceous; one of these was on the surface, and of the size of a walnut; the other was in the interior, and a little smaller. The kidneys and other viscera, both of the abdomen and thorax, were healthy, except that the intestines were blanched by the diarrhœa.

This case differs from the preceding ones in the formation of an external tumour, in consequence of the growth being chiefly in the arches of the vertebræ, instead of their bodies, and in the contamination of the adjoining parts. The same excruciating pain, however, attended this primary disease of the bones, which was present in most of the preceding instances of cancer following malignant disease of other textures. Its malignant nature was evident in the texture of the tumour, and of the tubercles of the liver, and on the whole it appears to me to have been nearer to scirrhous than to the fungous forms of malignant deposits.

Except, however, the acuteness of the pain, there was no circumstance which marked its character during life at all decisively;—it might have been caries with much chronic thickening of the adjacent parts, and slow suppuration, to which the trifling purulent secretion actually present gave it much resemblance; it might have been disease of the bone, with swelling from scrofulous or tubercular deposit, though the age was against it; or it might have been like a fatal case of organized deposit (from rheumatic inflammation likewise) related by our president,* which does not seem (as the preparation shows) to have been either tubercular deposit or malignant matter. Some suspicion of its real nature was sometimes entertained, but

* Brodie on the Joints, p. 309.

the case was confessedly too obscure for any one to pronounce a positive opinion.*

Case IV.—The next case differed materially from either of those previously described, in the age of the patient, and in the origin of the disease, as well as in the appearance of the tumours. The subject of it was under Sir Benjamin Brodie's care in St. George's Hospital, who has kindly allowed me to relate its history, for some particulars of which I am indebted to Mr. Tarrant, our present house-surgeon, who was then Sir Benjamin's clinical clerk; but I also saw the child repeatedly during life, and was present at a careful post-mortem examination, which neither of those gentlemen witnessed.

Charles Gilson, æt. 4, was admitted October 30, 1839, with a firm, inelastic tumour, distending the left nostril, of a reddish ash colour, which was attached to the outside only of the nostril, the skin and cartilage being much distended, and the tumour beginning to spread over the jaw under the muscles. It had begun about four months previously, in consequence of a blow, which had caused considerable hæmorrhage, and the tumour, which had been of late increasing more rapidly, had bled repeatedly. The general health was as yet unaffected, and therefore, although the disease was evidently malignant, it was determined, on consultation, that the tumour should be removed, together with as much of the maxillary bone as appeared to be implicated. In the operation it seemed probable that it did not protrude from the antrum, and Sir Benjamin therefore contented himself with destroying, by means of chloride of zinc, all the surface to which it was attached. The section of the tumour shows a firm gristly or half cartilaginous texture, with a slightly reticulated appearance in the centre, where it was most vascular.

From November 9, when the operation was performed, till the end of January following, when the child left the hospital, the health continued good, and there was only, as it appeared, some dead bone to exfoliate. On February 19, however, he was readmitted, looking pale and anxious, and scarcely able to move any of his limbs, in which much pain was felt. The

* It appears to me that some of the cases occasionally published as instances of malignant disease of the spinal meninges, or other parts around, are really instances of scrofulous or tubercular disease, or of simple organized deposit, like those above referred to. See, for example, the excellent article recently published on cancer in the "Cyclopædia of Surgery," in which Dr. Walshe quotes as an example of "Encephaloid growth protruding externally from the spinal canal," a case of Dr. Knox's (London Medical Observer and Enquirer, Vol. 3, p. 160), in which, however, the author himself describes the two bodies in question as being, one like a scrofulous gland, and the other as bloody pus, and which therefore I should regard as not being of malignant character. The truth is, however, that all verbal descriptions, and even many drawings and preparations of morbid structures, convey very imperfect ideas of their nature to those who have not themselves been witnesses of recent appearances.

abdomen was large and tender, there was a good deal of fever, and the nostril was full of tenacious mucus, with some coagulated blood. It appeared that he had had a fall a fortnight previously, since which his nose had bled profusely on several occasions, and he had rapidly declined in health, and the right hip, on which he was supposed to have fallen, was painful and tender.

After his admission, the paraplegia increased, as to the muscular power, but the sensibility was not lessened, nor was there any sloughing of the lower part of the body; and somewhat later there was an incontinence of urine and fæces.

Some bleeding continued to take place from the nose, with sloughing of the cheek, by which a large part of the maxillary bone was exposed, and its vitality destroyed, and in March, some glands behind the left ear enlarged considerably, and a tumour was felt at the extremity of the sternum. The general strength gradually declined, with much irritation from the gangrene of the face, and the child finally sunk on the 12th May, 1840, but without any loss of mental power.

The parts about the head had undergone much alteration; the maxillary bone was softened in the interior, and the antrum filled with soft medullary matter; the æthmoid and sphænoid bones were similarly changed, as well as the dura mater lining them, and the cells were obliterated by the morbid structure. Some new growth occupied the sphænoid fossa, and a portion coming into contact with the periosteum under the zygoma, the disease of the outer membrane had produced a hole through the temporal plate of the sphænoid bone, so as to project through it into the cranial cavity. The brain itself, however, was healthy.

The tumour at the end of the sternum had been formed all round the ensiform cartilage and adjacent bone, the cartilage itself being unchanged in the midst of a solid semi-cartilaginous mass, of the size of a large walnut, and of a yellowish white colour. A great many similar tumours existed in many other parts of the bones, which were almost everywhere confined to the periosteum, so that they could generally be easily separated from the bones by tearing off their investing membrane; the largest of these was on the inside of one ilium, and was three or four inches in diameter. They were most numerous along the front of the vertebræ, and on the ribs; and sections of the dorsal vertebræ showed that in several of these bones the new structure had spread into the cancellated texture, the outer shell being absorbed; and in the osseous tissue, as in the cells of the nose, the morbid growth was diffused and softened, so as to resemble medullary tumour, while all those of the outer part of the bones or cartilages were firm, and like fibrous cartilage in appearance; the intervertebral substances were wholly unchanged. Much new growth had also spread between all the processes of the vertebræ, and several masses of some size were formed on

the posterior part, and, in one section, the dura mater was thickened by new growth, but smooth on its inner surfaee. The appearance of the medulla spinalis in its reeent state was unfortunately not observed ; as far as can be observed, however, in its present condition, when hardened in spirit, it seems to have been irregularly pressed upon by the morbid growth within the spinal canal, but not to be otherwise altered in texture.

The vertebræ most affeeted were those of the baek, which have been preserved ; and from the tumours in front of these bones, a great mass of similar hard or eartilaginous appearanee, and apparently of globular portions united, projected forwards in the centre of the chest, whence it extended into the root of eaeh lung, the texture of whieh was thus mixed with divided portions of the general mass ; and in some parts towards the cireumference of the lungs, and under the pleuræ, were separate tubercles of similar hardness and appearanee to those in the periosteum. No tubercles were observed in any of the other viscera ; but the number existing on all the bony parietes of the abdomen accounted for the fulness and tenderness of that part during life. [This ease is previously described at page 246, in referenee to Polypi of the Nose.]

In this case the exact origin of the morbid structure in the nose cannot be determined, whether it were in the mucous membrane, or in the periosteum, or osseous tissue ; nor, indeed, whether it began in the nostril or in the antrum. From the healthy structure of the mueous membrane around the tumour, and from the periosteal origin of the tumours of other parts of the body, I am inelined to believe that the periosteum of the maxillary bone was the primary seat of the disease, and perhaps it may have begun nearly at once both in the nostril and antrum, as it did in both surfaces of some of the other bones, and as it often does in what are called malignant polypi.

Although hard and eartilaginous, the tumours had not the usual appearanee of the scirrhous or eommon cancerous form of malignant disease whieh is so seldom found at sueh an early period of life ; their fibrous and semi-cartilaginous appearanee may be aceounted for, perhaps, aecording to the usual laws of morbid growths, by the tumours having originated in the fibrous tissue of the investing membranes of the bones and eartilages of a young child. The morbid strueture in the softer mucous tissues of the nasal cavities, where the less resistance would make it increase more rapidly, has, however, the common tissue of medullary tumour of sueh parts. If, then, the whole disease be regarded as of this type, the great contrast it affords to the tortures of the preeeding cases in the nearly entire absence of pain in the vertebræ of this ehild, and in the other tumours which were perceptible, will be in accordance with what is usually observed in scirrhous and medullary diseases, eompared with each other previously to the changes

of ulceration. The acute pain in the limbs in this case, as was observed in the preceding cases, is not a diagnostic sign of malignant disease in the back, but only of pressure or irritation of the spinal marrow, from whatever cause it may arise ; so that the cause of the paraplegia was rendered probable only by the existence of other tumours elsewhere.

I am inclined to think, from scattered notices, that encephaloid and hæmatoid varieties of malignant disease may be more frequent than scirrhous forms of morbid structure in the vertebræ, although I have only the last case to relate upon this subject. For example, in the Museum of Guy's Hospital are two instances of fungoid disease, in one of which the lumber vertebræ are said to be crushed and affected with this morbid change in consequence of a violent effort, and in the other several of the dorsal vertebræ, as well as many of the other bones of the body, had tumours of this character formed in them, which implicated the medulla spinalis and its membranes, and induced paralysis.* Again, in a case published by Sir B. Brodie, in his work on the Urinary Organs, he has informed me that there was malignant disease of the spine of this character, although it is not there alluded to.

If, however, we exclude those cases in which the authors themselves express doubts of the nature or origin of the disease, or in which a careful perusal leaves uncertainty as to these points in the mind of the reader, it will be found that there is an equal dearth of well-described cases of the other forms of malignant tumours of the vertebræ, as there is of the scirrhous form.

Malignant diseases having only been clearly distinguished in recent times, it is only in modern works that we can expect accounts of such cases ; but in modern works professing to treat of the diseases of the spine, no one alludes to the subject except Sir B. Brodie, in the case of cancer already quoted ; and in works which treat of the affections of the spinal marrow, such as Ollivier, Serres, Abercrombie, and others, no satisfactory case is detailed. Dr. Abercrombie indeed remarks, that "fungoid disease of the spinal cord occurs in connection with disease of the vertebræ," and says that several cases of the kind are related in Ollivier. In reality, however, Ollivier's work only contains three cases in which fungous disease, partly affecting the bones, was supposed to exist : in the first of these, which is quoted from Serres,† the deposit on the dura mater, with slight alteration of the vertebræ, was probably scrofulous ; "semblerait se rapprocher de la matière tuberculeuse ramollie" is the expression of Serres himself. In a second case quoted from Wolf,‡ a child, ten years old, after a fall, had

* See Catalogue, Nos. 1,037, 1,038, 1,027, &c.

† "Journal de Physiologie Exper.," Juillet 1825.

‡ "Bull. de Sciences Med." de Ferussac, Janvier 1826.

several vertebræ affeeted with medullary disease, forming external tumours in the baek and loins, with paraplegia. And in the third ease, quoted from Lecat,* several lumbar vertebræ were eonverted in part into a malignant growth, in a man who had also met with a fall, and the patient died two days after an unsuecessful attempt to extirpate the tumour.

These eases, however, have been classed by Ollivier† and by Dr. Walshe,‡ among the cases of medullary disease of the spinal meninges; although I think it just as probable that the morbid growth may have originated in the bones, and spread secondarily to the membranes of the spinal marrow, as in the ease I have related. Such may also have been the fact in a ease related by Phillips,§ and quoted by Dr. Abererombie as medullary disease of the spinal meninges, in whieh a boy of fourteen, three years and a half after a fall, was attacked with violent pain in the baek, thighs and legs, followed by paraplegia, with a tumour of large size in the loins, subjeet to frequent hæmorrhage; besides the medullary tumour, said to have originated in the cord, several of the vertebræ are also said to have disappeared with softening of the saerum and ilium, as well as of those bones.

These three cases may therefore have been medullary disease of the bones in the first instance, spreading to the dura mater, which I have no doubt was the eause of the disease in the fourth ease I have related; but besides these instanees, of which a different view is taken by the authorities I have alluded to, I only know of two good eases of this fungous form of malignant disease of the vertebræ whieh have been published, both of which are to be found, with plates of the disease, in Cruveillhier.‖ In one of these eases, a woman, forty years of age, eame under notiee, with enlargement of the abdomen; and a very large eancer, as he calls it, (doubtless fungous disease) of the breast. Three or four months afterwards she was again brought to the hospital in consequence of fraeture of the middle of one thigh bone, and while this was being bandaged, the upper part of the other thigh also broke, and she died in the following week. The drawings of the diseased parts show several white tubercles, apparently medullary disease in the caneelli of both thigh bones, in many places besides those which had broken; and numerous tubercles in the vertebræ, which were chiefly in their interior, but some had made their way externally by absorption of the shell. It does not appear, however, from the history, that the spinal marrow was in any way affeeted. There were also tubereles in the cranium, some in the diplöe, some raising the dura mater only, and others both dura mater and perieranium. The liver eontained a multitude of tubereles, and so

* "Traité de l'Existence du Fluide des Nerfs, &c."

† Ollivier's "Traité de la Moelle Epinière," pp. 490, 737, 745.

‡ Art. Cancer, "Cyclopædia of Surgery."

§ "New London Medical Journal, vol. i."

‖ Livraison, xx. pl. 1.

also did the pleuræ and peritoneum. The tumours are said to have been white and resisting, with much cancerous juice in their composition.

Cruveilhier's second case was in a young man of twenty-seven, whose testis was removed for medullary disease, six months after which he was seized with acute pain in the sides of the chest, and difficulty in raising his arms, then with pains in his shoulders, and afterwards palsy of the lower extremities. There was an encephaloid tumour of the seventh dorsal vertebra, which was entirely destroyed by it, as well as part of the sixth vertebra, the intervertebral cartilage between them being unaffected, and a tumour of the same kind was commencing in the fourth vertebra, and in the posterior extremity of the first two ribs. No disease was found elsewhere, and the condition of the spinal marrow is unnoticed.

[*Med. Chir. Trans.*, vol. xxiv., p. 45.

CLINICAL LECTURE ON CASES OF INJURY AND DISEASES OF THE SPINE.

Case 1. Dislocation of dorsal vertebræ (?).—2. Partial paralysis from injury (?), or from lead (?).—3. Curious formation on the intervertebral substance with paraplegia.—4. Disease of spine (?) or spinal marrow (?).—5. Paraplegia from intemperate habits.—6. Disease of vertebræ or intervertebral substance.—7. Scrofulous caries of the spine, with psoas abscess.

In systematic courses of lectures on surgery, given during the winter session, the student is accustomed to hear the causes, and symptoms, and consequences of disease clearly defined; and the treatment necessary for its cure or alleviation regularly stated; and well-marked cases are selected to illustrate the more common and important complaints, while rarer maladies are briefly alluded to, or altogether omitted, owing to the short period allotted to the course. In some cases of disease the student recognizes the same clearness when he begins to study them in the wards of the hospital: and he is at no loss to understand immediately the nature of the disease, and to follow the treatment which is employed; and he can test its inefficiency, perhaps, or its power over the malady, according to what he has heard from his instructors. But it is not always so: he soon finds that many diseases are extremely obscure, and that the symptoms, in different cases of the same disease, vary so much, as to require corresponding variety of treatment, to a much greater degree than he had been led to suppose. He thus learns the difficulty and the importance of *diagnosis*, that is to say, of the distinctions between different kinds and varieties of disease, for which some persons' minds are much better constituted than others. You will thus find that you have, in any obscure case, to pass rapidly in review every disease which is at all likely to occur in any given organ or tissue; to lay aside, successively, the

symptoms and appearances which are common to all, or to several of such diseases, and select only the more distinctive characters, till, finally, only such remain as can belong to one of these diseases, or at the most to two of them, between which you are left to choose; and you will find that much patient observation, and much practical experience too, are required in some cases, especially in the more chronic disorders of any given part of the body. I think, then, that a clinical lecture is sometimes very usefully devoted to the rarer cases, and the more obscure and difficult circumstances, which it is not the province of the systematic lecturer to dwell upon.

Among the parts of the body the disorders of which are sometimes very intricate and difficult, is the spine; in the injuries and diseases of which part you are presented with many similar symptoms, both locally as well as from interruption of the functions of the spinal marrow, whether the disease be situated in the bones or ligaments, and other textures belonging to the spinal column, or in the spinal marrow itself, or in its membranes, such as inflammation, softening, new growths, and so on; or even, sometimes, when there is no disease of these parts at all, but the cause is actually seated in the head, and the spinal functions are only secondarily impaired. I propose, then, in the lecture of to-day, to pass briefly in review a few cases of injury or the consequences of injury, of the spine.

1. The first case I will notice is one of injury to the spinal column, without any injury of the spinal marrow within; at least its functions are not in the least interfered with. It is that of John Campion, æt. 52, who was admitted April 15th, about ten minutes after he had been driving under an archway, and, in the act of stooping, his shoulders came in contact with the upper part of the arch, which bent him very considerably. When admitted he was in a state of collapse, and could not support the weight of his body, although there was no paralysis of any part. I saw him about an hour afterwards, at which time he was still in a state of collapse, and the dorsal vertebræ, from about the sixth to the twelfth, were bent in a curved form backwards, and there was a deeper depression between the spinous processes of the seventh and eighth vertebræ than between any of the others, and there was a great effusion of blood about the injured part, and among the long muscles of the back; there was also excessive pain and tenderness, which wholly prevented the patient's moving; and he had much pain across the lower part of the chest, and difficulty of breathing, which were in part owing to previous illness.

Here, then, was an accident which is frequently fatal, but in this case is not likely to be so, as the spinal marrow seems quite safe. What is the nature of the injury? The preparations on the table show you that the usual result of such an injury is a dislocation or fracture of the bodies of the vertebræ; and if you look to this preparation, from a patient of mine, who

lived, I think, five months, so that the fracture is perfectly united, you will see that the body of the vertebræ is considerably shortened and crushed down, so that an abrupt angle is formed posteriorly by the spinous process, while a portion is driven into the spinal canal so as to lacerate the spinal marrow. In this patient (Campion), however, the curve was not an acute angle, but a segment of a circle, in which several of the vertebræ participated; it was such as you may witness in a case of common lateral curvature from weakness. The man, however, is positive that the back was straight before the accident.

Dislocation of the spine, without fracture, has been denied by some surgeons, and is generally considered very rare. I have seen it, however, several times, and there is no doubt of its occurrence. In this preparation you may see the intervertebral substance between two vertebræ quite torn up without fracture, though there was fracture of another bone in the same patient. It is, of course, most common in the neck; and you may here see a complete separation of the bodies of the fifth and sixth cervical vertebræ, from a patient of mine, in whom the bones were quite uninjured, unless there be a small portion of one articular process broken off, which appeared to have been done after death. The displacement was sufficient to injure the spinal marrow, although the posterior longitudinal ligament was not torn; and what was curious, in the same patient, who fell from a window upon his head, the sternum also was quite broken across, though the periosteum on the inside of the bone was not injured.

Now I was inclined, at first, to believe that, in our patient, there was a laceration of the interspinal ligament, allowing the spinous processes to separate, so that the finger could be pushed between them; that this laceration might extend through the ligamentum subflavum, but that it probably did not, as the effusion of blood was so great that, if it had done so, some blood would have been likely to enter the spinal canal, and press upon the spinal marrow. If you observe the effect of my changing the position of the articular processes of these two vertebræ, you will see that, if I displace both at once, the upper part of the spine sinks forward, so that the spinous processes do not project so much as they ought to do, if you look at their line laterally; and that, if I dislocate one joint only, the upper vertebræ must be twisted, so that the line of the upper spinous processes, viewed posteriorly, does not correspond with those of the lower ones. It was quite clear that one articular process was not dislocated, and I thought, also, that the line of the spinous processes was not altered as if both were displaced. Since the blood has been absorbed and dispersed, however, there is an appearance of the upper vertebræ having sunk forwards and downwards; and as I made extension of the spine, and pressed on them without altering the curve, and without feeling any crepitus, as of broken bone, I am induced, on the whole,

to think it probable that the articular processes may have been thus separated, and dislocated, though certainly without much, if any, laceration of the intervertebral substance. The great curve of so many vertebræ may have arisen from the quantity of blood driven among the long muscles, and therefore as this dispersed, the curve has lessened; indeed, now it has nearly disappeared.

In the treatment of the case you will have observed that I directed him to be cupped to ten ounces on the day after the accident, as the pain was still excessive; and our notes tell us that, on the 17th, the pain was lessened after the cupping, notwithstanding the jar of an old cough, with muco-purulent expectoration, and he was directed to lie on his back on a hard mattress, with a small pillow for his head. On the 27th the depression still existed to a considerable degree, and is not yet gone (May 7th). He can now turn pretty readily in bed, but is unable to support his weight; so that, if he sits up, he is obliged to bear the weight of the upper part of the body by resting his hands on the bed. Our notes also remark that there was, yesterday, some pain round the lower part of his chest, reaching to the spine. If there be laceration and displacement of the vertebræ from one another, we may expect that it will take some time to unite the ligaments again, and to guard against inflammation and its future consequences; and on this account I ordered him a blister, which we must repeat as often as pain requires it, or weakness remains likely to end in further mischief. With this caution there seems to be no reason why he should not become strong again.

2. In the same ward with this man is another, who has a curious local paralysis, which affects one hand and one leg.

William Cooper, æt. 34, admitted February 14th, after he had been buried with two other men (who are now cured), for three hours, by the falling in of a sewer, but not in such a way as to interfere with his breathing. On admission, he was perfectly sensible, but seemed much alarmed, and shook much from this cause. He complained of pain in the left side on inspiration, but appeared to have no fracture of the ribs or any other bone. The next day he had had no sleep during the night, owing to pain and stiffness, and complained of numbness on the left side, which he attributed to his position under the gravel.

16th.—Less numbness of the side this morning; complains of a little giddiness; he has lost the power of flexing and extending the fingers of the left hand, and the power over the wrist-joint is gone also.

On the 17th, our notes say there is less numbness of the side, but he feels more pain in it, and now the right foot is found to be partially paralyzed in exactly the same way as the hand; the sensibility of both the hand and foot is also impaired, so that slight pressure is not felt, and harder pressure gives a sensation of pins pricking him: the bladder and rectum are un-

affected. Pulse 72, weak; but he complained of more giddiness, with pain in the head confined to the back part. For this I had him cupped on the neck to six ounces; and on the next day the notes say the pain and giddiness were relieved.

On the 20th, a curious numbed sensation in the head was spoken of, but it has not been again noticed; the partial palsy, and lessened sensibility, however, remain nearly the same now (May 7th) as at that time.

Now the question is, on what does the paralysis depend which has been the result of this accident? There has been no symptom, in the first place, making it likely that the head was injured; such partial palsy is a very rare circumstance in any case, and he has made no complaint referable to the brain except of the giddiness and a little pain, and the curious numbed feeling, before mentioned, which soon subsided; and the only remedy of any consequence was the small quantity of blood taken by cupping early in the case, which was done, in the uncertainty attending the injury, quite as much with reference to the spinal marrow as to the brain. Secondly, does the palsy depend on any injury of the spine? There has been, you will remember, no affection of the bladder or rectum, there is no palsy of the abdominal or thoracic muscles, there is no paraplegia, that is, no paralysis of both hands or both legs, or of all the extremities in greater or less degree, but only of the left wrist and the right foot; and such partial palsy is at least very rare after injury of the spine, though there is great irregularity at the commencement of any chronic disease of this part. Is there, then, any injury of the nerves in their course? This seems to be the feeling of the patient himself, for he says he remembers well his left wrist being doubled down, and kept there by pressure of the wood and gravel under which he was confined. Still, however, there has been no swelling like inflammation; and the pain at first was more complained of in the left side of the trunk of the body, where there is no palsy, than in the hand or foot. You may remember, however, my having more than once questioned him as to the possibility of his having been exposed to the influence of lead, for his hand drops, and has exactly the same appearance as in the partial palsy which is common in painters from the use of lead. A man was under my care, a year or so ago, with exactly the same palsy of one leg and one hand, though it usually affects the hands only; he came in for an injury of the knee, and the palsy being of only five weeks' duration, I was able to get him well. A similar paralysis arises also from other metals: I remember, for example, being myself instrumental in causing it in a woman who was ordered to have some arsenic and nitric acid applied to a large spot of lupus of several years' duration on the nates, which had resisted other remedies. The lupus was permanently cured by it, but besides the poisonous influence of the absorbed arsenic on the stomach, which subsided in a few days, there was a

partial palsy and numbness of both hands and both feet, which continued in a less degree several years afterwards, when I last saw her, so that she could not work with her needle. How the metallic poison acts may be doubtful; it has been sought for in vain in the brain or spinal marrow, but has been said to have been found in the muscles; at all events it is absorbed into the circulation so as to produce the distant effects just described from external application, which is also evident from a fact, first observed by Dr. Burton I believe, namely, that a blue line at the margin of the gums is found in those suffering from the effects of lead. Our patient has not such a line distinctly, but there are several blue spots which look suspicious: it does not appear, however, that he has had anything to do with lead, nor that he has been in any circumstances likely to have exposed him to its influence; and he is positive that there was nothing the matter with him before the accident.

In this state of uncertainty, then, as to the cause of the palsy, I have been somewhat at a loss what to prescribe. I have used, you will observe, a splint for the hand, which is of service in the dropping from lead, and I have treated the case, as if local, by friction and blisters in the course of the nerves in each extremity, which have not done much good: he has used electricity, which he thinks strengthens the limbs a little, first with sparks, but the machine has been imperfectly used, and at present in the form of galvanism, and he is now beginning to take tincture of cantharides internally, which will do good in some cases of palsy. Should he not be benefited by this treatment I think I shall employ blisters to the spine, that is, to the source of the nerves, which are of great service when partial paralysis remains after injury of the spine.

The bad consequences of injuries to the spine are sometimes very slow in their progress, and last a length of time; so that attention must be paid to any complaint of remaining pain, and stiffness, and weakness, after such accidents, in order, by the proper use of cupping, and rest, followed by blisters, or setons or issues, to prevent a fatal result. The more common of the consequences of falls, or blows or strains of the spine, are caries of the bones, or ulceration of the intervertebral substance; but there may also be a variety of new growths about the spine. A very curious and rare form of alteration of structure following injury has been lately under our notice, which is not destitute of interest: it is the case of

3. Henry Senfield, æt. 53, admitted April 17th, with paralysis of the lower extremities, almost complete, and partial paralysis of both hands. From his appearance and manner I believed that it was more a medical than a surgical case, but I admitted him, as he gave this history: "that he had a severe strain in the loins two years ago, and had lost the use of his legs about nine months, which were much wasted, but perfectly sensible to the touch." He

was in the Bath Hospital for a month, two years ago (that is, soon after the accident), and was treated with cupping and issues, and was dismissed as incurable; and was treated in a similar way in the Middlesex Hospital, and was sent out thence also as incurable. On seeing him the next day, I found that there was no pain on percussion of the spine, and no projection of any part; the affection seemed confined to the anterior part of the spinal marrow, as is generally the case with caries of the spine, but the palsy was too general for any caries except in the upper part of the spine, of which there seemed no evidence; and as he had a severe cough, with much frothy mucus, and appeared very ill altogether, I transferred him to the physicians' care. He died a few days afterwards (April 27th) of inflammation of both lungs, of which the post-mortem book contains an account, but which I will not read to you, as it is irrelevant to our present subject. "The substance of the brain was very firm, but the ventricles contained a large quantity of transparent fluid." This, however, although paraplegia may arise from some diseases of the brain, did not seem likely to have occasioned the partial paraplegic symptoms of our patient, and the examination of the spine was made, the bodies of which in front were unaffected. On opening the canal, "the spinal marrow and its membranes were healthy," so that the case did not appear more clear; but on taking out these parts it was found "that on the posterior surface of the intervertebral cartilages were, in two or three places, small yellow, opaque, friable bodies, immediately in contact with, and apparently growing from, the intervertebral substance. The nature of the deposit could not be determined, but it certainly did not look like scrofulous matter. The largest of these bodies was situated in the lumbar region, and the smallest in the lower part of the cervical region. They projected into the spinal canal, and must have caused pressure upon the anterior column." You will see that the largest of these little bodies is not much larger than a pea, and the appearance is nearly lost by maceration in spirit; they appeared to me to be very similar to the intervertebral substance itself, a kind of hypertrophy of these bodies, but yellower, firmer, and more brittle. I may observe that their direct pressure must have had less influence on the spinal marrow than some indirect effect on the circulation of this body and its membranes. Hence it is, of course, that, in caries also, the motor power is commonly alone impaired, the effect on the spinal marrow being on its anterior part only, which is more immediately in contact with the bodies of the vertebræ, which are the seat of the caries, and the same, also, in ulceration of the intervertebral substances; and whenever there is much loss of substance, with sloughing and deficiency of vital power in the parts below the disease, you may be sure the cause must be one which affects both columns of the spinal marrow, which caries is not likely to do. In our present case, then, we had paraplegia from an accident likely to have caused disease of the

spinal bones or ligaments, affecting the nerves of motion only: the exact nature of the disease could not be known, for I never saw another instance of it. The symptoms so far differed from those of caries that I expected to have found some disease of the spinal marrow rather than of the bones, as it really proved on dissection, though of a very rare form of altered structure.

4. The next case I will bring under your notice is also one of alleged injury of the spine; but it is attended, like it, with some obscurity of symptoms, though the history seems clear enough.

William Marks, æt. 23, admitted on the same day as the last patient (April 17th), with supposed disease of the spine, of which he gave the following history:—About sixteen months ago he had a fall across the abdomen, and in three or four days his back became painful and stiff, and soon afterwards, in lifting a weight, he felt something snap in his back, and he could not stand for six or seven hours afterwards: he then became an out-patient for six months, and got quite well. About five weeks ago he slipped off a plank on to the side of a barge, with a sack of coals on his back, and directly he felt his back bad again, which has been getting daily worse.

On examination, the spine was straight; no pain was felt on percussion on any part of the spine. He complained chiefly of starting pains, particularly on motion, and great pain on pressing across the lower part of the loins, where the long muscles were very tensely stretched. The tongue was clean; pulse natural; and he said he was in good health. There was no numbness of the legs, but he could not stand on them on first getting out of bed, from pain in the back. The urine was natural. A day or two afterwards he complained of more pain in the back and in the shoulders, with startings and twitchings of the arms, and now he complained also of pain, on percussion, of the lower dorsal vertebræ, and of a sense of constriction across the chest and abdomen.

Here, then, we have many of the symptoms which disease of the spinal column in the part to which the pain is chiefly referred would have occasioned, but there was a greater contraction of the long muscles of the back than usual, and some affection of the upper extremities was spoken of, and although the spinal marrow is sometimes affected above the seat of the disease, yet it seldom goes so far upwards as from the loins to the axillary plexus. Again, pain is often complained of below the real situation of the disease; so that I have many times seen setons or issues employed upon one part of the spine, while a curve has subsequently shown itself above the part supposed to be carious: still, I scarcely think there can be caries near the upper part of the back to cause the twitchings of the arms he has spoken of. Something in the man's appearance induced me to suspect there might be another cause of paraplegia, which is too frequent, namely, intemperance of life. Indulgence in wretched school habits, or over indulgence

in sexual intercourse, are well known to occasion paraplegia by producing softening probably of the spinal marrow, as if the excitement of the sentient nerves, and of the reflex actions, as they are called, ended in alteration of structure of the centre of the medulla. In such cases, to distinguish them from cases of caries, you will commonly find all the extremeties more or less affected, sensation impaired, and there is more spasm of muscles than is usual with ordinary caries; the mind is weakened, so that the memory is defective, and the patient is subject to low spirits and fits of crying; the countenance is pale, and the pulse feeble, and there is a downcast look of suspicion and shame, while no part of the spine can be fixed on as the exact seat of disease. I could not well put our patient into the confessional with twenty or thirty of you round the bed, and therefore directed the question to be put in a more private way, and our notes of May 3rd say that he owns to masturbation, and that he has been a great rake; so that both causes may have been in operation at once.

A very well marked instance of paraplegia from onanism was under my care not long since, which some gentlemen may remember; and I will read the notes of the case, to illustrate the diagnosis in our present case.

5. Henry Perrin, æt. 32, was admitted June 15th, 1842, giving the following history of the paraplegia under which he laboured. When about 16 years of age, he fell from a height of about seven feet, and struck the back of his head, and he says he was weak in the back afterwards. Seven years ago he again injured the back of his head by a fall from a load of goods, and was laid up for it some time, having blisters applied to the neck. Soon after the accident, the right arm became weaker than usual, and about three years ago the left arm also became weak; says the right leg has been weak several years, and both are so now, so that he can scarcely direct his steps. He is unable to retain his urine for any length of time, and the bowels are very costive; memory failing, and he is very nervous, and easily cries. Sight not affected, nor his hearing. Has no pain in the head. Urine pale, acid. Sensibility lessened, so that he does not feel a blister. Temperature of axilla and groins the same, both being 100°, yet his feet feel cold. No disease of spine was apparent, and, on inquiry, he confessed to having indulged in excessive onanism from the age of 16 to 26, which practice was extended to the present time in reality, for he complained of convulsions coming on when he went to sleep, and then acknowledged that he caused the convulsions by a continuance of the same fatal habit.

You see, then, that an account of injuries and accidents likely to have occasioned diseases of the spine may be given by the patient, and yet the real cause may be very different. The unfortunate victims to the propensities in question learn something of the nature of disease, and endeavour to deceive the surgeon, and conceal their delinquences; there could be no doubt

however, of the cause of the paraplegia in this case, and some of the signs I have enumerated will generally enable you to distinguish a well-established case.

I have doubts, then, about Marks's case, and in the earlier stages of a chronic disorder, like the softening, if it be so, which dissipation creates, it is of course much more obscure than at a later period. With regard to the treatment of his case, I at first contented myself with watching the man, to see if anything very decided would show itself; for in a chronic and obscure disorder it will often require more than one visit to obtain the whole history from the patient, and to observe every symptom actually present, and some fresh symptom may show itself to decide a doubtful point. In a few days, as much pain was complained of, I had him cupped, and again on the 29th, as the pain was again increasing.

May 3rd.—The notes say the pain was less, and then I ordered a blister, and repeated this yesterday, as the first had scarcely risen, and I have directed it to be kept open, and he now says he has lost the twitchings of his arms. I am treating it, in short, in a manner that is calculated to do good in either case; and if it prove, as is perhaps most probable on the whole, that there is disease of the lower part of the spine, I think it is often best to precede the use of issues by cupping, followed by one or more blisters. If, on the other hand, there should appear reason to think that my suspicions of the influence of the patient's habits are strengthened or confirmed, issues will not be called for, and a different practice may be required, which I will not enter upon.

Having brought before you these more rare or more difficult cases connected with the spine and spinal marrow, you will do well to contrast them with plain and evident cases of common disease of the spine, of which two instances are under my care, which I will briefly allude to.

The effects of loss of substance in the spinal column are seen in the preparations on the table, in some of which there is inflammation of a healthy character, that is, without scrofulous deposit, the intervertebral substance not being at first affected, in which cases the bone remains hard, and is not much destroyed by ulceration, and parts occasionally become necrosed; in others the bones are first filled with scrofulous matter, and so many of the bones are sometimes simultaneously carious, that the loss of figure is very great; in others, again, the intervertebral substance ulcerates first, and the disease may be, as you see, altogether confined to this structure. For practical purposes, the healthy caries, which takes place in adults for the most part, may be classed along with the ulceration of the fibrous cartilage between the bones, for I do not think you can always distinguish them from one another. Of this kind of caries an example has been afforded in a man who has been several months in the hospital.

6. Richard Nicholls, æt. 29, was admitted September 6th, with angular

curvature of the 7th dorsal vertebra, with weakness and pain in the loins and hips, extending down the inside of the thighs. He can walk but little, and that with pain and difficulty ; and the legs start a little at times. He was in the hospital under my care seven years ago, and had issues kept open for nearly seven months ; after which he was able to go about till about a year ago, when he came into the hospital under Mr. Babington, and had issues kept open for three months. He went out relieved, but not able to work ; since which time he has been attended by a surgeon in the country, who has passed setons which are only just healed. On his admission this time I again ordered issues to be made, and under their use he has gradually and steadily improved, though he has not altogether lost the pain and starting, nor quite regained the power of motion : he can, however, walk much better than on his admission.

In cases of this description you can in general look forward with tolerable confidence to a cure, if the patient's constitution is in a comparatively good state ; they have not much tendency to the formation of abscess, and the disease is slow in its progress ; issues have great power over the ulceration, and nothing else can be trusted to with the same satisfaction. The issues require to be kept open for a considerable time, unless the irritation is itself injurious. You will observe that seven months was the time I first employed them, and the patient then had nearly six years' freedom from disease, till a year ago a fresh accident or strain, or some derangement of health, reproduced the disease ; three months was then insufficient to check it, and I shall probably keep them open this time for a year or more, and most likely, after the pain is quite gone, I shall have them kept them open for some time, even after I have thought it prudent to let him again walk about. The chief difficulty in the treatment is to ascertain when gradually increasing the motion and exercise of the part will no longer be injurious, and you must feel your way carefully.

Such cases are strongly contrasted with scrofulous caries, which affects young persons chiefly, is attended very often with little or no pain, and frequently goes on rapidly to the formation of matter in the shape of lumbar and psoas abscesses : the employment of issues and even of blisters is injurious instead of useful, by the irritation and weakness they occasion ; you must trust solely or chiefly to the influence you can excite by steel, and other tonics, on the general health, except in some young persons in whom the pain is greater than usual, and the disease perhaps is less scrofulous, in whom leeches once or twice, or one or two blisters at first, relieve the inflammation without weakening much ; after which, rest, and the protection afforded by light stays, are the only local remedies you are to have recourse to. An example of scrofulous caries is afforded you in a girl now in the hospital with a large psoas abscess.

7. Eliza Grey, æt. 18, admitted March 20th with a fluctuating tumour in the right femoral region. She was in the hospital last year under my care for fistula lacrymalis of three years' duration, and went out in August last, wearing a style in the duct. Soon after she went out, she says, she jumped off a window-sill about six feet, and fell on her side, which has caused lameness of the right hip ever since, and at this time she first perceived pain in the back, and shortly afterwards a swelling appeared in the groin. There is, our notes say, a fluctuating swelling about three inches in diameter just below Poupart's ligament, and fluctuation can be felt by pressing above, that is, the iliac fossa is full of matter, communicating under the ligament with the swelling in the groin. She complains of pain on percussion of the lower dorsal and upper lumbar vertebræ, where there is an apparent but slight lateral curvature to the left, and she complains of pain in the hip when walking, which appeared to be owing to the proximity of the abscess. The patient is of a scrofulous appearance, and has a scrofulous abscess of a cervical gland, and another on the left cheek, in addition to that of the lacrymal sac.

There is no doubt, then, of the nature of the disease in this case; that there is caries of scrofulous origin in the spine, ending in abscess. Psoas abscess, in fact, scarcely ever takes place without your finding some disease of the bones of the spine, though it used to be supposed that it did so not unfrequently; and of course, too, when of such a size as in our patient, the disease is frequently fatal.

The only practical point I shall speak of in her case regards the abscess: are you to open them? and if so, in what manner is it to be done? It is observed that opening these large abscesses is not unfrequently succeeded by severe constitutional derangement—rigours, fever, secondary abscesses, and death; and it has been supposed that this arises from the entrance of air, and that opening the abscesses, and immediately closing them again, is likely to prevent these dangers. My own opinion is, that the mode of opening them is of much less importance than has been imagined; that the symptoms depend not on the entrance of air, but on the condition of the abscesses, on the sac being inflamed, on the secretion being unhealthy from communication with bone or mixture of blood, especially if you squeeze the abscess, and thus injure the blood-vessels. You will, therefore, often see exactly the same symptoms when the sac is in this state, without its being opened at all, or whether you close it or leave it open after you have punctured it. I remember a young woman who had a lumbar abscess, with rigours, and fever, and pain, in her side, and the sac was red, and increasing rapidly, and I said to the students, I don't like meddling with this abscess, for it is in such a state that I dare say she will have absorption of foul matter and secondary deposits. I was obliged, however, to do it, and, as I anticipated, she had on

the third day rigours and perspiration, and died in a few days more with secondary deposits. I do not wish you to understand that the air entering a cavity may never do harm; you have only to compare a simple and compound fracture to see that it may do so; and accordingly, if there is blood mixed with pus in the abscess, the access of air is likely to assist its putrefaction, and make the secretion foul and poisonous. When your patient has rigour or perspiration or fever before you are obliged to open a large abscess, it is better to make a free opening, and let it remain open afterwards; if, again, you find the matter is dark coloured or offensive, or blood escapes into the abscess, do not close the puncture, lest it inflame subsequently, and foul pus be confined; but if, on the other hand, you open a psoas abscess on account of its size, or its rapid increase, and there are no constitutional signs of inflammation in the sac, and if when you let out all the pus, you find it is healthy, and free from blood or offensive smell, there is no reason why you may not open it in the way recommended by Mr. Abernethy, and it may possibly contract, as I have sometimes seen it do, and by rest and other measures be prevented from filling again. If you are obliged to puncture it again, you may at a future time let it remain permanently open.

As there seemed no reason against it in this girl, who had slight chills only at night, and no distinct fever, and as the abscess was increasing, I punctured it with a trocar, letting out on April 6th about ten ounces of healthy pus, and closed the orifice. Again, on the 15th, I evacuated about twenty ounces of pus, thinner than before, and with a few lumps of cheesy matter. Perhaps I may do the same again; or, if it seems to fill rapidly, I may leave it open to discharge constantly. The case is, however, a bad one, owing to her state of health.

[May 10th.—Mr. Hawkins again let out about twenty ounces of pus, and on neither occasion was any fever produced.]

[*Medical Gazette*, vol. xxxiv., p. 209, May 17th, 1844.

CLINICAL LECTURE ON DISEASES OF THE SPINE.

Given at St. George's Hospital, May 26th, 1846.

1. Caries of Lumbar Vertebræ—Abscess of the Sacro-iliac Joint—Dislocation of the Hip.—2. Caries of Lumbar Vertebræ—Lumbar and Psoas Abscess—Hæmorrhage, &c.—3. Caries of Dorsal Vertebræ—Angular Curvature.—4. Caries of Cervical Vertebræ—Paraplegia and Spasm of Muscles.—5. Caries of Dorsal Vertebræ—Sudden Paraplegia.—6. Abscess in Inguinal Canal—Disease of Spine (?).—7. Abscess of Nates—Disease of Spine (?).

In a former lecture, gentlemen, I brought under your notice eight or ten cases of disease of the knee-joint, thinking it sometimes useful to compare several cases of diseases of the same part, or of the same disease in different situations, to see in what particulars they agree with, or differ from, one

another in their origin, or symptoms, or treatment. There is another subject, which is equally important, because it is so common that you will every one have constantly to treat it; namely, disease of the spine, of which I have nine or ten cases now under my care, each presenting some peculiarity even when the disease is the same, and some of them having the same symptoms, although the affections which produce them are very dissimilar: I propose to bring some of them under consideration to-day, and the others perhaps on a future occasion.

The diseases of this part of the body may influence either the spinal marrow alone, or the spinal column alone, or both together; and of the diseases of the spinal column there are three varieties, which you will generally recognize: first, ulceration of the intervertebral substance, which is analogous to the ulceration of the cartilages of the joint; secondly, a comparatively healthy inflammation and caries of the bodies of the vertebræ, in which there is often hardness of the bone around the caries, or new bone deposited on the surface, as in the preparations before you, and very little distortion, or loss of substance, both diseases commonly arising from a blow or strain; and thirdly, scrofulous caries, in which there is softening of the bones, with deposit of the peculiar cheesy matter of scrofula in the cancelli, as in the analogous disease of the heads of the bones in the joints; this deposit being the result of unhealthiness of the blood, and the consequent separation of ill-formed lymph in various textures by the capillaries. It is to the scrofulous disease that I purpose to confine our attention in the first instance, of which there are various examples; and I will first take two cases, in which you have watched the disease up to its final termination, and seen some very curious effects; one of these having been fatal two or three days ago, and the other patient not having many days to live.

I.—The first case is that of Thomas Baggett, æt. 21, who was admitted on the 14th of January, with the following history. For the last nine years he has been subject to the formation of scrofulous abscesses in the glands of the neck, the hands, and arms, &c.; and in this you see the evidence of that taint of the whole system on which the spinal disease also depends; and then, as you might expect, such a succession of abscesses, which are the result of constitutional debility and mal-assimilation, itself aggravates the bad state of the system by the irritation and waste which the abscesses produce.

In April last he experienced pain about the *left* hip, running down the inside of the thigh, which continued to increase till the end of November, when he gave up work. He describes it as a sharp shooting pain. He has also some dull pains in the lower lumbar region, and in *both* groins, particularly the left, and he cannot walk without a stick. There are old cicatrices in the neck, and a large one in the *right* nates, which was the

result of a large abscess sixteen months ago, and which I almost thought, from its situation, might have been a spinal abscess, making its way out of the sciatic notch ; but it proved to be only external to the pelvis. There is some fulness and pain above the left iliaco-sacral joint on the left of the spine ; there is a scrofulous abscess on the outer side of the left forearm, and abscess and swelling of the soft parts along the metacarpal bone of the second finger of the right hand, apparently not leading to bone.

You will observe that pain is referred in this case to both groins : with regard to the left this is of importance, as we shall afterwards see, in connection with the hip-joint, which was diseased when he died ; but as to the right groin no psoas abscess was found on that side except close to the spine, and therefore the pain in the groin was only nervous, from the irritation of the upper part of the nerves near the spine.

Now it often happens that such a pain is felt in disease of the spine ; and as the patient limps, and cannot straighten the hip-joint perfectly, because it drags on the psoas and iliacus muscles, and there is no reference made to the spine in the absence of pain of that part, the affection is not unfrequently mistaken for commencing disease of the hip-joint ; just as the knee-joint is supposed to be affected, and is blistered, when the real disease is in the hip-joint. The other symptoms of the disease of the hip being absent, a little care in examination of the hip and spine will enable you to ascertain where the actual disease is situated.

You observe, next, that the note on his admission, of fulness in the left lumbar region, is changed on the 23rd for apparently some collection of fluid in the left lumbar region ; the suspicion of abscess is changed into a certainty ; and on February 4th perspiration is noticed, and on the 23rd I was obliged, as he suffered much from it, to open the abscess which had formed, and was going down the back of the sacrum, and let out some thick pus, deeply situated, and two or three days afterwards it was clear from the quantity of pus which came out from coughing, and from the depth to which the probe passed above the spine of the ilium, that the matter came from within, and was not connected with the outside of the innominatum or sacrum, which its situation made very possible.

In the next place, it is noted on the 23rd January, a few days after his admission, that he had cough, and expectoration and dulness on percussion over both lungs, and on the 28th that the muco-purulent expectoration was flocculent, not unlike that observed in the early stage of phthisis ; and he continued to be more or less troubled with these symptoms during the whole time he lived. You will often find this circumstance in patients, who are confined to bed by chronic complaints of this kind, and from their emaciation, and the rigours and the perspiration often present, and the whole appearance of the patients, you will often think they must be labouring

under tubercular disease. It has been exactly the same in his fellow-sufferer, Critcher, and yet I do not know that there is more reason than in this man to suppose that there are tubercles. You saw, on examination, that the lungs were quite healthy, except that a portion of the back part was œdematous.

This poor man gradually got worse, and the notes of the case do not require much observation. On March 20th it is observed, that there was some sloughing of the trochanter threatened, and he was placed on the water-bed, and he derived from it the same advantage as so many patients experience from this admirable invention of Dr. Arnott.

Having often had pain in both groins, on May 4th the notes refer to some more swelling in the left groin, from the increase of inflammation in the psoas abscess, and attention was directed to much pain in the groin and hip, when it is moved, or pressed in any way, the pain being, indeed, apparently very great; he gradually got weaker from pain, and discharge and irritation, and died on the 22nd, four days ago.

Besides the state of the lungs, which I have already mentioned, the only visceral disease observed was a large and somewhat fatty liver. The two lowest lumbar vertebræ were carious to a slight degree on each side of their bodies, and there was an abscess on each side communicating with the diseased part; that on the right side was small, and only extended a little way down the psoas muscle, which was not raised or discoloured on its surface; on the left side the abscess near the bone had discoloured the psoas muscle, and passed down to the ilium, the whole of which was covered with matter both on its outer and inner surface, the bone having only a thin covering, like lymph, in contact with it; the matter passed through the sacro-iliac joint (which was destroyed) and above the brim of the pelvis to the cavity on the dorsum of the ilium; and in front the pus passed under Poupart's ligament on the inside of the vessels to the hip-joint, which was also destroyed, and filled up, as you see, in some measure, by soft substance, the head of the femur being dislocated, and lying on the dorsum of the ilium in the abscess there situated.

There was thus a most complicated combination of suppurating cavities connected with the disease of the spine, the abscesses from which make their escape in many different directions, as the other cases show. The dislocation of the hip-joint, with the amount of solid deposit in the acetabulum, suggest the lesson of endeavouring, whenever this joint is diseased, to keep the limb nearly in the extended position, so that the head of the one may not rest on the shallowest part of the socket in the line that the gluteal muscles can most easily act on it. Unfortunately, the bent position is that which many persons with disease of the spine and of the hip are obliged to adopt, as it relieves them of very much suffering, and when this

position has been kept up for a long time, you are sometimes compelled, especially in children, to give up the attempt to alter it, on account of the intolerable pain which it occasions.

The dislocation of the hip in consequence of disease of the lumbar vertebræ is a remarkable circumstance, and yet it has been, I believe, occasioned by it; and perhaps you will find it also, when the other patient, Critcher, dies. There may, of course, be a scrofulous disease of the spine and hip, simultaneously but independent of each other, just as this patient had also scrofulous abscesses in several other parts of the body; but in Baggett, the contact of the matter after it followed the course of the psoas into the thigh, has, in my opinion, occasioned the disease in the hip, and perhaps as lately as the beginning of the present month, when the pain on moving the joint became so severe, which it was not at first; and in Critcher, also, the symptoms became worse when the hip-joint inflamed from the same cause. In Baggett, you find that the sacro-iliac joint has also been destroyed from the same abscess, and thus both the joints open into the same extensive abscess, beginning at its highest part, the carious lumbar vertebræ.

II. The next case for consideration is that of Henry Critcher, who lies in the next bed to that in which Baggett lay: I may observe by the way, that I was sorry to see them thus placed in the last few days before this man died, and I cannot approve of the plan of collecting together several cases of the same kind: patients are too acute not to recognize the similarity of their complaints, and to know, when they see others dying around them, that their own turn is coming; it necessarily occasions in some a despondency, which hastens their own end, while it creates in others, when the scene is often repeated, a recklessness and hardness of mind, which in a moral and religious point of view is, at least, as undesirable as the other feeling. The age of this man was 23, nearly that of the last patient: he was admitted on the 27th of August last, and the notes say, when he is laid straight on his back there is some prominence of the left knee, but no shortening of the limb; some fulness of the left groin, both above and below Poupart's ligament; considerable pain in the groin, and down the inside of the thigh, when the knee is pressed down; the pain seems to depend on the extension of the psoas muscle; no pain in the hip-joint. When the whole body is twisted by the shoulders he feels pain in the left lumbar region, but none is produced by direct concussion.

His account is, that about 20 weeks since, being then in perfect health, he got wet through; this was followed by pain in the lumbar region, and about twelve weeks since he had a shivering fit, and afterwards perceived some fulness about the groin. Soon after the cold he experienced pain in making water, referred to the neck of the bladder and left side of the loins, and he has been living very poorly of late.

The progress of the case has been in so many respects similar to the last, that I shall not do more than comment on what has been most worthy of observation.

The most common course for the matter of diseased spine to take is that which is determined by the least resistance or by gravity ; you have, therefore, in Critcher two psoas abscesses, one on each side, and one lumbar abscess ; and you can frequently see them alternate or change in the course they point at. While a person is moving about the matter gravitates towards the groin, but when lying on his back in bed, the passage by the side of the quadratus is the most dependent situation. I have been, however, obliged to open the cavity on one side in the loins, and on the other in the groin ; not, however, on the inside near the insertion of the psoas, where the pus has made its way both in Critcher and in Baggett, but on the outside of the groin immediately to the inside of the anterior superior spinous process, where you may see a great cavity covering the iliac muscle, and pumping matter out in great quantity when he coughs, or inspires deeply.

You have observed me postpone opening these abscesses for a long while, and not do so till I was obliged, by the more rapid increase of matter. The abscesses, depending on disease of the bone or intervertebral substance, cannot heal while the disease is still advancing, so that the longer time you can give for rest, and your other remedies, to make the caries lessen or cease, the more chance there is of the abscesses healing ; nor is this all, but the life of the patient is often put in imminent danger by the act of opening them, which is sometimes immediately followed by great inflammation of the sac, with a risk of absorption of pus, and the formation of secondary abscesses. You cannot avoid opening them, however, when the abscesses are extending far, and increasing rapidly, or are very painful, nor if perspirations or rigours show that the constitution is suffering from confinement of matter ; the latter symptom, however, the shivering, being a very bad one, as it indicates a state of irritation that makes inflammation very likely to ensue. In Critcher all these local and general signs made the opening of the abscesses necessary ; and the first time you may remember that there was no inflammation, and he was for a time much relieved by letting out the collection, which was pointing in the right loin ; another time, however, there was inflammation after the puncture, and he became worse in health. I may observe, that the opening in the loin is the most dependent, while the patient lies in bed, and even when he becomes well enough to move about it often affords a more direct exit for the matter than an opening in the groin, which is so far from the vertebræ.

You have seen in Critcher, as I have already mentioned, the same cough and muco-purulent expectoration from congestion in the lungs as were

present in Baggett; and you have also observed the production of the same disease in the left hip-joint, the matter having gravitated quite to the back of the inside of the thigh round the head of the bone, in addition to its pointing, where I opened the abscess on the outer part in front; and his suffering has been very considerable since the hip-joint inflamed.

There took place on two occasions a considerable hæmorrhage from the abscess on the left side; the first time it was restrained by plugging the orifice in my absence. This, however, is not what you are to do, as it prevents the blood escaping outwardly, but occasions very little pressure on the bleeding vessels of the surface of the abscess, and the lodgment of coagula in its cavity excites these vessels still further by irritation, and moreover the blocking up of the orifice makes the blood and matter enlarge the abscess. What you are to do when there is hæmorrhage from an abscess is to enlarge the opening freely, so as to take away all tension and irritation from the bleeding vessels, which are commonly small ones in every part of the surface; they can then contract and retract, which they will not do when in a state of irritation. And even if the bleeding happens to be from ulceration of the vessels of the orifice, its enlargement is then also the best means of enabling the vessels to close, just as you stop the hæmorrhage from a puncture of the temporal artery in bleeding by dividing the vessel transversely; and if they do not contract, you have room for finding the source of the hæmorrhage, and tying the vessels. I once opened an abscess, and came into the ward above, and before I had time to return, in a minute or two many ounces of blood had been lost; but by making the opening larger, the vessel, which was at the corner of the orifice, immediately contracted and closed, which it could not do when half divided.

There is only one other point to which I will allude in this case, which is this. I yesterday found the discharge very copious, and quite brown and dark in colour, looking like fæcal matter, which the nurse said she had suspected for several days, though I could not perceive any fæcal smell, nor does any air come out of the wound. Of course there is nothing unlikely in an abscess making its way into the bowel as it does into the hip; I have seen it do so, and I have known an abscess burst into the bladder with very great hæmorrhage. It so happens that the nurse in another ward thought that the same thing had occurred in Baggett, but examination after death showed that the intestines were quite safe. The colour arises, in an unhealthy abscess, from admixture of blood, and is sometimes changed by a freer orifice, sometimes by some medicine given to the patient.

Both these cases came under treatment after abscesses had formed, and the disease had proceeded too far for a cure to be effected; it is not often, indeed, that any adults recover after suppuration has actually taken place; but occasionally it may happen, or at least after fluid has formed, which appears

to be purulent, but which may possibly be serous in some measure. A gentleman is now under my observation, in whom fluid formed at least ten years ago, on the side of the spine, and it has never disappeared, though it varies in amount, the spine, which is much distorted, being strong enough, since the disease ceased, for all purposes.

III.—In neither of these two cases has there been any alteration of the figure, the amount of absorption of the affected bone being small; in the next case there is much loss, but no formation of pus.

This patient, Edward Carpenter, who is nearly of the same age as the others, viz. 25, was admitted on the 15th of April, with projection of the ninth and tenth dorsal vertebræ, the ninth being most prominent; he has no pain nor any tenderness on percussion or pressure. The scapula and trapezius of the left side are elevated, as a result of an alteration of the form of the chest, and there is a slight degree of puffiness between the spinous processes and posterior border of the scapula. There is no cough and he has perfect power over the sphincter ani and vesicæ. Pulse quick and weak, and he is pale and weak in appearance.

About six or eight months ago he first found projection of the spinous process, which was to about the same extent as it is now, with weakness of the back when walking, and within the last week the legs have become weak and rather painful. He never had a blow or strain, and says he has always enjoyed good health.

Here, then, there is considerable projection of two spinous processes, which makes the exact situation of the caries evident, while there was nothing in the other cases to point exactly to the vertebræ affected. As in many scrofulous cases, he has no pain; and in him you observe, what the other cases were free from, a slight affection of the spinal marrow, which is shown by the weakness and pain of the lower limbs. As there is not any apparent suppuration, there seems to be no reason why this patient should not recover, the distortion of course remaining. It will require total rest, probably for a year, to subdue the disease and favour anchylosis, and, besides this, we must endeavour to strengthen his constitution by good living and tonics; he is taking, in fact, porter and bark. The only doubt I have had with regard to his treatment has been whether I should employ caustic issues or not. It is very seldom, however, that caustic issues are called for in scrofulous caries of the bones, and almost never in children; in whom the irritation they occasion has a debilitating effect, which aggravates the badness of the constitution to which the origin of the disease is attributable. It is in the ulceration of the cartilages in the joints, and by analogy in the disease of the intervertebral substance, that they are chiefly indicated, and therefore, as yet, with an entire absence of pain, I have abstained from ordering them; but I shall do so, perhaps, if he complains of it hereafter.

IV.—The next case for our notice is William Wallington, æt. 9, who was admitted January 14th, with partial paraplegia. Four or five years ago, he says, his back began growing out, since which time his mother had noticed the same thing, and six months ago took him to a dispensary; he never had any pain in the back; three weeks ago his legs began to give way under him, and in a short time he could not walk or stand without support; there was no pain in the legs, and when lying down he can throw them about, and there is no loss of sensation. At the same period there came on some difficulty in making his water, so that when urged to do so he could not pass it for some time; and there is constipation. There is some slight pain on pressing the lower lumbar vertebræ, and some prominence of the upper lumbar, and of the seventh cervical vertebræ.

Here, then, we are presented with a farther effect of scrofulous caries of the spine, namely, not weakness only, but a very considerable loss of power over the voluntary muscles of the limbs, and over the bladder and the rectum also. Paralysis is much more common in children than it is in adults, partly because the smaller size of the bones, and the greater amount of absorption by the caries, make the irritation of the disease more easily reach the meninges, and partly because there is in them a greater amount of deposit of scrofulous matter which makes direct pressure on the spinal marrow. You will sometimes see a considerable swelling from this cause about the affected part, which is obviously not suppuration, and is gradually absorbed, when the disease admits of cure; in this preparation you may see a large swelling of solid matter, which was fatal by its pressure within the canal.

A second circumstance which you may observe is, that the entire absence of pain in scrofulous caries may be a disadvantage, since it may lead to the disease of the bones being overlooked, or to a difficulty in ascertaining its exact situation. I remember a child who was admitted with paraplegia, and no apparent distortion or tenderness, and so entire a freedom from pain that it used to be an amusement to the pupils to see him voluntarily tossing himself head over heels in the bed, which was done in a singular manner, in consequence of the total loss of power over the lower limbs;—the case appeared, therefore, to be one of infantile paralysis, from affection of the spinal marrow; but, by-and-bye, an angular curvature took place in the dorsal vertebræ, with fatal abscesses. In Wallington, it seemed probable that there was caries: but a degree of prominence in the loins, and the fact that this part alone was painful, made me inclined to think that the slight prominence noticed in the neck was only the natural projection of the so-called vertebra prominens. Accordingly the child was kept at rest, and had bark given it, with a small blister or two in the seat of pain, and on the 30th, the notes say, "Improved in health, and he can stand firmer on the legs." I

did not much examine him, as he seemed improving slowly, till a change took place for the worse in about a month ; and, on March 6th, it is observed that the power over the lower limbs is decreased ; they are always in a state of contraction, and the muscles of the abdomen are hard and stiff, and he has pricking sensations, occasionally, in the hands and arms, and a few days afterwards—the power over the extremities rather decreasing than increasing —the upper being also somewhat implicated ; he cannot place his legs flat in bed, and it required some force to press them down, when thus spasmodically bent. At the same time you might have observed the reflex functions exceedingly energetic, so that if you pinch the calf of the leg or thigh, the leg is thrown up with violence, without any power of control. And now that attention was again drawn to the spine, by this increase of effect on the spinal marrow, it was observed that there was much prominence of the fifth and sixth cervical vertebræ, with pain about the part when pressure was made on the occiput—a symptom which was absent when he first came in, but is a very characteristic sign of caries in the upper part of the spine ; and, again, a few days afterwards, the notes say, the head is apparently sunk forwards and downwards on the shoulders, the neck being, in fact, shortened, and the chin carried in front of the usual line.

This boy's case is the only instance in which the cervical vertebræ are affected, and there is a remarkable difference in the effect on the limbs when this part of the spine is diseased. In this case the lower limbs are destitute of voluntary power, while the action of the upper extremities has scarcely been interfered with at all, and that only for a short time. On the other hand, the sensation of the lower limbs has not been at all impaired, while in the upper, which have not been paralyzed, there are some pricking sensations, and they have been somewhat numbed. In other cases all the four extremities are nearly equally paralyzed, and there is no voluntary power below the neck. In others, again, the upper extremities alone are paralyzed, while the legs can be moved at will. When the arms alone are affected, you may generally expect that the cause is some deposit or effusion around the nerves after their coming off from the spinal marrow ;—on the other hand, when the legs are paralyzed, as in our little patient, but the arms retain their power, we may conclude that the spinal marrow is affected by irritation and vascular excitement, or by pressure.

You may, perhaps, feel inclined to ask, if persons with so much caries of the cervical vertebræ as in this boy can ever recover completely ? Certainly, I think, fewer recover from the disease in this part of the spine, than when it is situated in the back or loins, yet they will do so sometimes in bad cases. A girl under my care was obliged to be carried into the hospital with perfect paraplegia of all the body below the neck, and with a good deal of fever, and the dropping forwards and downwards of the head and four upper

vertebræ was much greater than in this boy, so that the chin was actually lower than the upper part of the sternum, and there was much swelling round the neck; nevertheless, in a few weeks, by rest, and some blisters and proper medicine, she quite recovered the use of all the limbs, and although the deformity was very considerable, from the malposition of the head, she grew up strong, and ten years afterwards continued without relapse.

In our patient, also, there is no suppuration, and his health is good: in fact, he has been getting almost too fat lately, and recovery is by no means improbable if he avoids abscess. He has had two blisters on the neck, which have caused no irritation, and the power over the legs has a little increased, and the joints are not quite so firmly contracted; and it is noticed that the right leg is less affected than the left. The difficulty in evacuating the rectum continues troublesome, for which he takes colocynth and scammony, but he empties the bladder readily. I yesterday ordered him sarsaparilla and some iodide of potassium, instead of the bark which he formerly took.

V.—In the next case we witness a still greater degree of influence on the spinal marrow, and the case is remarkable from the instantaneous occurrence of the palsy.

Charles Hayward, æt. 7, admitted on the 6th of this month, with some lateral distortion of the spine, and very great angular curvature of the ninth, tenth and eleventh dorsal vertebræ, making the body and neck to project a good deal forwards; in fact, nearly to a right angle with the upper part of the chest, which is deformed; and the bones of the upper extremities connected with the chest are small and placed unnaturally, from the altered form of the chest. He has no power of motion over the lower limbs, but sensation and the reflex movements remain perfect. There is incontinence of fæces and of the urine, which is highly alkaline, and loaded with pus. There is no pain at the seat of curvature. The abdomen is tumid and distended, and he has slight cough. There is a large slough, the size of a five-shilling piece, over the trochanter major, oval in form, and the urine, from constantly dribbling away, has excoriated the penis and scrotum. He is of a pale scrofulous aspect.

He says that when he was four years old he had a fall on his back, and the caries and curvature then commenced; but he has had some incontinence of urine from his birth. At Easter, the curvature having become considerable, he was knocked down on his back by a dog, and when he was taken up he found that he had lost the use of his limbs, and the incontinence of fæces then commenced.

Here, then, I presume that the destruction having become very great, the fall he describes broke down some soft substance and ossific matter, which instantly brought the remaining surfaces nearer to one another, increasing the angle still more, and causing actual pressure upon the anterior part of

the spinal marrow, instead of the irritation which is seen in the case of Wallington. Instead, therefore, of spasmodic contraction, as in that boy, there is perfect palsy, and relaxation of the parts below the seat of the disease, affecting the sphincters and the limbs. The notes remark the tumid and distended state of the abdomen, which is considerable, however, in almost all scrofulous cases; indeed, it is in the digestive organs, doubtless, that we have to look for the unhealthy and imperfectly formed blood which is the primary cause of all the local inflammations; but there is also much distress where there is loss of power over the abdominal muscles, as in this boy, in consequence of the formation and retention of much gaseous matter within the alimentary canal, which is not now subject to proper pressure. There is also, you observe, an ammoniacal and purulent state of urine, besides palsy of the sphincter of the bladder;—this is not often the case in disease of the spinal column, though it constantly is when the spinal marrow is affected. I suspect, therefore, that the state of the urine depends in part on the same fault which appears to have occasioned some incontinence all his life; but there is also, in general, some retention of urine, whenever there is incontinence, and therefore the alkalescence and the pus may arise from some lodgment of part of the urine, and irritation of the coats of the bladder from it. The notes say, in fact, just after his admission, that a catheter being introduced into the bladder, some highly alkaline and purulent urine was drawn off, mixed with blood.

In this case also, notwithstanding the great distortion and the complete paraplegia with which he was admitted, recovery is by no means improbable, and already you may observe some improvement. On the 14th the note is, —ulcer over the trochanter much better, and granulating favourably; there is still incontinence of urine and fæces, and he has no power of motion over the legs, but his health is much improved; appetite good; sleeps well, &c.

On the 25th, no power of motion of the legs, but he has regained power over the detrusor and sphincter vesicæ.*

The health first improves, you observe, and to that the chief attention is to be paid in scrofulous caries, by tonics and good living; and as his strength returns, and the part is rested, the spinal marrow may regain its power after the temporary pressure, the sphincters having already recovered their power of contraction, as is usual with these instinctive muscles, before those of the legs.

You have found, from the consideration of some of the cases, that it is not always easy to know the exact seat of caries of the spine, when you know that some of the vertebræ are affected; but further, it is ocasionally difficult,

* On the 29th, three days after the lecture, no incontinence of urine and fæces, and he has slight power over the legs; wound over the trochanter healing up. The amendment to the present time, June 19, has not, however, been great.

with scrofulous caries, in consequence of the little pain caused by it, to know whether the spinal column is or is not diseased at all.

VI. William Willis, 23 years of age, was admitted a few days ago (May 20th), with a swelling half the size of an ostrich's egg, situated nearly midway between the spinous process of the ilium and the pubes, above Poupart's ligament, and running somewhat in the course of the spermatic vessels. It dilates on coughing, but cannot be lessened in size by pressing it in the axis of the pelvis. It is not painful, but is tender, and the skin over it is of its natural colour. He is of a pale unhealthy aspect, and has slight cough. On minute examination, neither the spine or hip seemed to be in the least affected, and he has never had a sore on the penis. This abscess first appeared in the month of March, as a small painful lump, the size of a marble, and has been gradually increasing to its present size, and he says it is always larger when he is walking. He has had rigours and perspiration at night, and he has lost flesh lately.

The feeling of fluid, the rigours and constitutional disturbance, make it pretty certain that the swelling in the inguinal canal is a chronic abscess, as, although he has a little cough, there does not appear to be any disease in the lungs or elsewhere to account for these general symptoms. The case, was sent to me, however, for a truss, as being an inguinal hernia, to which the impulse on coughing, and the enlargement from walking give it some resemblance. A psoas abscess is also very like a femoral hernia for the same reasons; indeed, more like a hernia than this case, since an abscess of the spine coming down below Poupart's ligament can be made to recede by pressure in the horizontal position, and return again by exertion, whereas the swelling in Willis is like an irreducible hernia. When a hernia contains bowel, the sound on percussion helps you in your diagnosis; but with a swelling partly over the abdomen the proximity of some bowel to the side of the abscess gives a doubtful sound if you strike it upwards towards the intestine; by pushing the hand downwards on the abdomen, you may in some measure push away the intestine from the swelling while you tap it, so that the deception from the bowel lying in contact with it is removed. In Willis there is in this way no sound like air in the swelling. As, however, there may be fluid in the sac of an irreducible hernia, I recommend you to act with caution in similar cases, since a hernia has often been opened as an abscess; and when you open an apparent abscess, if you have any doubt, cut down cautiously into the cavity, so that you may see what you are doing, rather than plunge a lancet or knife deeply into it, lest there be any intestine concealed by fluid.

But supposing that the swelling be an abscess, of what nature is it? Now I have drawn your attention to the case along with those of diseased spine, because I suspect that this also is a spinal abscess. It is true that the in-

guinal canal, or abdominal wall in front, is not so common a course for an abscess to take as below Poupart's ligament, or in the loins, or the sciatic notch, but the fluid trying to pass down under the outside of Poupart's ligament below the superior spinous process, as in Critcher, will occasionally be prevented by the density of the fascial attachments, and will make its way behind the peritoneum along the spermatic cord, where there is little resistance. My reason for thinking it may be so is this; I think the iliac fossa, up to the spine of the ilium, may, by deep pressure, be felt fuller than on the other side, as if there was an abscess situated there, as in both Critcher and Baggett, with a prolongation into the inguinal canal, the covering being too tense to allow of the fluid, which projects in front, being pushed back into the interior; an abscess confined to the abdominal walls, as a glandular abscess in the inguinal canal, would be unaccompanied by such a fulness of the hollow of the ilium, and would probably by this time have reddened the skin, which a spinal abscess has less tendency to do.

I recommend you, therefore, to watch the case, as I also must do somewhat more, because, as I have already told you, I do not like opening spinal abscesses unless it is really necessary.

[On the 15th of June, the abscess having become larger and more painful, and some pain having been felt in the loins, as if from extension of the abscess, an opening was made, by which he seems to-day, the 19th, to have been relieved. The pus was thick, but not very great in quantity. This patient died a year afterwards, in July, 1847, when the abscess was found to occupy the iliac fossa, as high as the side of the vertebræ, and depended on necrosis of the ilium, which had affected the sacro-iliac joint, and the hip-joint, secondarily. The right kidney was converted into a membranous bag, of considerable size, adherent to the under surface of the liver, and containing fluid with a trace of urine.]

VII. There is one more case to which I will draw your attention in the few minutes that remain to us, namely, that of Elizabeth Cage, 39 years of age, who was admitted on the 8th of April, with the following history. On the middle of the posterior part of the right nates is an aperture, which cannot be traced far or towards any dead bone, the skin around it being dark coloured. It has been open for a fortnight, and discharges a moderate quantity of thin pus. There is no pain in the back, and the motions of the hip seem perfect, and not attended with any pain; there is no cough or pain in the chest, but a little expectoration. There is a great deal of blood, and a watery yellow discharge with the catamenia, but no disease of the uterus or vagina could be detected on examination. She first complained of pain in the nates about nine months ago, which was never so severe as to confine her to her bed, the pain extending down the leg; and she has been much

out of health since that time. The abscess gradually formed, and burst about a fortnight ago.

This woman seemed on her admission exceedingly emaciated and weak, and looked like a person in the last stage of consumption; and as the abscess, as far as it could be traced, was insufficient for such a state of health, I requested the physician to examine her; but he could not perceive any internal complaint to account for her condition.

On the 20th, the notes say she was much better and stronger, with less discharge from the abscess. On May 1st, however, there was an increased and offensive discharge, and I was obliged to open the cavity more freely, but the amendment to her health has not continued, and she appears to be in a very precarious state of health, but wishes to leave the hospital, which perhaps may be the best for her in her hectic state.

The cavity, in this case, passes towards the sciatic notch, and in all probability, although it is now little more than a sinus, it turns in some way towards the inside of the pelvis, and is very probably an example of spinal abscess which has passed to the back of the pelvis, and so obtained an exit through the sciatic notch, whence an abscess often turns up again, and covers the outer part of the innominatum. If it has not a spinal origin, it most probably arises from disease of the inner surface of the sacrum or innominatum, or the joint between them; the length of time it took to come forwards, and the serious inroad it has made on the constitution, being greater than would be occasioned by a common abscess in the cellular tissue.

The other cases connected with the spine are of a different nature from those we have to-day considered, and are somewhat obscure and curious, so that perhaps I may resume the subject on another opportunity

[*Medical Gazette*, vol. ii., new series, p. 1109.

CLINICAL LECTURE ON

INJURY AND DISEASE OF THE SPINE, WITH PARAPLEGIA.

JUNE 9th, 1846.

1. Caries and Ulceration of Invertebral Substance—Disease of Hip-joint.—2. Paraplegia—Disease of Medulla Oblongata (?)—3. Paraplegia—Injury of Back—Disease of Spinal Cord (?).—4. Paraplegia—Injury of Side—Disease of Urinary Organs—Disease of Spinal Cord (?).—5. Paraplegia—Hysteria.

I.—In a clinical lecture which I gave a fortnight ago, I brought under your notice a series of cases to illustrate the common but important subject of caries of the spinal column; and among them was the case of a man named Critcher [see *ante*, p. 412], who had then, as we agreed, not many days to

live ; he has since died exhausted on the 5th of June, and this is the record of his post-mortem examination in the register.

Body well formed, but very much emaciated. A small sore not exposing the bone existed in the sacral region. Two openings where the bone was exposed existed in the region of the anterior superior spinous process of the left side, and a small opening in the right lumbar region.

Abdomen.—With the exception of the viscera being exsanguine, they were all for the greater part of a healthy appearance. The spleen, however, was not only very pale, but soft and pultaceous. The disease of the spine had apparently originated in the lower part of the dorsal region, between the last dorsal and first lumbar vertebræ ; the bodies of these bones were partially destroyed at the upper and under surface of the respective vertebræ, and the intervertebral cartilage had entirely disappeared ; a slight antero-posterior curvature was thus produced. From these parts of the spine the matter had made its way along both psoas muscles ; on the right side it had also passed behind the kidney, and in this lumbar region a small probe was passed through the opening mentioned above, which was situated on the outer margin of the quadratus lumborum. In the iliac fossa of this side the anterior crural nerve was laid bare, and very much pushed out of its place, forming an extensive curve, with its convexity outwards :—(in which circumstance you see ample reason for the acute pains in the groins and thighs often felt in cases of this description, and which I mentioned in my former lecture as occasioning the idea of the case being one of diseased hip, when it really existed in the spine). The pouch of the matter terminated in the groin in its usual position.

On the left side, the matter, after having passed along the psoas muscle, had extensively destroyed the iliacus muscle, but the surface of the bone was covered over by a thick layer of soft vascular granulations. At Poupart's ligament this matter in passing into the groin, had taken two different courses ; one of these channels passed to the outer side, and terminated in a pouch above the sartorius muscle ; the other channel passed in the direction of the tendon of the psoas and iliacus, having the vessels above, and to the inner side ; this pouch communicated with a large quantity of scrofulous matter in connection with the hip, but the capsular ligament was not destroyed ; the cartilages were extensively absorbed ; the bones, however, were not softer than natural. The matter which was found in these various pouches connected with the disease of the spine was very foul, and of a dark colour. A small portion of the crest of the ilium was exposed.

A patch of miliary tubercles existed at the apex of the left lung. Both lungs were anteriorly emphysematous, and posteriorly they were loaded with red frothy serum ; old and partial adhesions existed on both sides ; heart healthy.

This account presents us very nearly with what was expected, and it bears much resemblance to the case of Baggett, which was recently fatal. It appears, indeed, that the disease of the spine probably commenced in the intervertebral substance, instead of in the bone, as is usual in scrofulous caries, but still it was not the usual disease of this substance in adults, and was no doubt scrofulous in its origin, in whichever of the two textures it actually commenced; and the effects of the disease were very like those of the case from which this preparation on the table was taken, which is manifestly accompanied with strumous deposit, but has also destroyed more of the cartilage than of the bone.

You perceive that the disease of the hip-joint, which we anticipated, had not gone to the extent of forming one cavity with the abscesses, and ending in dislocation, as in Baggett's case, but we could more perfectly recognize the exact period when the proximity of the pus of the psoas abscess, with the capsular ligament, occasioned the inflammation and at last the destruction of the interior of the joint.

You perceive, also, from the account I have read, that there was one spot of commencing phthisical disease, but that the long-continued cough and purulent expectoration which he laboured under were, as in Baggett, not owing to this, but to the congestion of the lungs, of which there was evidence during life, as well as in the examination after death; and the scrofulous deposit which was just commencing in the lung was only the sequel of this.

Since my former lecture, another patient, a woman of the name of Cage, has also died; but having left the hospital at her own desire, we have had no opportunity of ascertaining whether the abscess of the nates, which I spoke to you of, originated in disease of the spine, or sacrum, or innominatum [see *ante*, p. 421].

We have seen from the series of cases which have passed under review that caries of the spine may affect the function of the spinal marrow so as to cause paraplegia of the lower extremities, or even of the arms also, if it be situated high up: and palsy of the bladder and rectum, and of the muscles of the abdomen and trunk of the body; that the paralysis may be total, with the muscles flaccid; or may be accompanied with spasm, so that the muscles are constantly stiff and the joints fixed, or the limbs involuntarily moved about by contractions of the muscles. We have also seen that occasionally, but not nearly so often, the sensation is impaired, as well as voluntary power, so that there may be numbness, or even entire loss of sensation: the temperature and nutrition of the parts thus more or less deprived of nervous power are generally maintained in cases of caries, but sloughing of the parts on which the patients lie sometimes takes place; as in all weak persons, who are emaciated. All these effects are evidently inde-

pendent of direct pressure on the spinal marrow in most cases, so that they may be strongly marked when there is no curvature whatever, and there may be a very acute angular curve in the spine without any paralysis; the influence upon the functions of the medulla being no doubt in general owing to the state of circulation in itself or its meninges from the contiguity of the diseased bones or abscess, and being therefore very variable in many cases.

There are, however, various other causes of paraplegia besides the common disease of the spinal column, some causing irritation by the changes in the circulation, some by simple pressure, and some by organic changes in the spinal marrow; the diagnosis of diseases of the spinal marrow, and the parts around it, is therefore extremely obscure and difficult.

II.—Nay, it is sometimes far from an easy task to decide whether paraplegia depends on disease of the spine at all, or whether it has not a cerebral origin, by which the influence of the brain upon the spinal marrow is in some measure intercepted. There is now a little boy under the physician's care, whom I have been asked to examine on account of this very obscurity. He has incomplete paraplegia, so that he cannot in the least support himself by his lower limbs, though he can move them as he lies in bed; but he retains power over the arms, so that he can for a time support himself upon his hands, if he is seated upright in bed; he cannot, however, raise himself from the horizontal posture, or move in any way, and the long muscles of the spine are wholly paralyzed, so that in whatever direction the head is turned to that side the spine inclines in a complete circle, if he is partially supported; otherwise he necessarily falls to the side to which the centre of gravity is inclined; and when he has fallen down on the bed, however twisted and awkward his posture, he cannot alter it himself: his head alone can be voluntarily turned. There is no pain or tenderness, however, in any part of the spine; if you look at it when curved forwards you perceive no angle, but it is a general circle, because the long muscles are palsied, and you see that it has nothing to do with altered figure of the spinal column, because you can make the curve posterior, or anterior, or lateral, by inclining the head, that is, the weight of the upper part of the body, in this or that direction. Such a circumstance as this shows you at once the palsy of the long muscles on which it depends, and is an important distinction between a circular and varying curve, and a permanent one from diseased spinal column, whether it be an obtuse or acute angle, whether it be posterior or lateral.

My impression therefore is, that the paraplegia has a cerebral origin, and probably in the medulla oblongata or cerebellum; at any rate, very high up, which seems to be confirmed also by complaint of the pain in the head, and general illness. You may ask whether this is likely to be the case since the arms are not so much paralyzed as the legs; but, in fact, you may constantly

see, in cases of apoplexy with hemiplegia, that the arm is much less palsied, and recovers itself sooner than the lower limb. I have therefore left this boy under Dr. Nairne's care ; still as I have only seen him once since his admission a few days ago, and such cases are, as I have often told you, obscure, I recommend your watching him, and I shall probably see him again myself.

III.—Another case, which is obscure both as to the nature and seat of the disease, is that of David Jones, æt. 60, who was admitted on the 8th of April for an injury of the spine. He complained of pains in the loins and lower part of the back, with general curvature of the whole of the spine, but with no particular prominence of any of the spinous processes, and with no pain if the patient is kept conversing during the examination, though he jumps violently when touched at other times. He says it was caused by a fall which he had about two months ago. He has been out of employment, and has not lived well lately. Sleeps restlessly ; bowels regular ; tongue clean ; health seems good, but he has an anxious expression of countenance. I was half inclined at first, with the peculiar circumstances of the alleged pain, and with the history of want of work, to suspect that the man wished for a little of the hospital diet, which is sometimes the case ; but the anxiety of countenance was against the supposition, and as it afterwards went off when the pain lessened, I was obliged in a day or two to conclude that the suffering of the patient was real.

The case was one arising from a fall, but the curvature could not be the result of any of the common effects of an accident, and he denied that it existed before the fall : there was no part of the spine especially complained of, and it was not likely to be a case of caries or inflammation of any of the bones : the circular curve was more like that of the boy whose case I have alluded to, though there might be disease of the medulla oblongata ; yet it was apparently not cerebral, and therefore must be connected with the spinal marrow, and probably in the neck or upper part of the back, since all the long muscles of the back were in some measure paralyzed : what was its exact nature I could not feel certain ; whether there was congestion or watery effusion or softening of the spinal marrow, or some deposit in the meninges, making pressure on the spinal cord. With this view, as soon as I was satisfied that there was real disease, I applied a blister to the spine on the 13th, and increased his diet, as he complained of getting weaker.

The spinal origin of the complaint seemed still more probable as fresh symptoms showed themselves; it became evident that besides the general curve from palsy, or weakness of the long muscles of the back, there was some loss of power over the muscles of the abdomen and of the lower limbs, and the sensation also became impaired. On the 20th, the notes say—Pain in the back less violent, but it is still bent, and he complains of weakness of spine, coldness of the legs and feet, and a feeling of spasm or twisting round

the upper part of the abdomen. On the 24th, complains of coldness of the feet, and a peculiar twinging around the lower part of the chest, and he had some difficulty in moving the legs. At the same time he slept well, and his appetite was good, and he no longer looked so ill. These symptoms, then, showed an affection of the whole spinal marrow—the posterior column as well as the anterior; motion and sensation both lessened; the temperature lessened, independent, as it seemed, of the circulation, and therefore influenced through the nerves; and various pains complained of, varying in situation, and referred only to the distribution of the nerves, while the cause was situated at their origin, or in their course.

On this view of the case was the treatment conducted, which has been moderate support in food, and latterly a little wine, as he was weakened by an attack of diarrhœa; while counter-irritants have been employed, five or six blisters having been applied along the spine, from which he always derived benefit, and often asked for them to be repeated. On the 17th of April the note says—Much less pain from the application of the blister; on the 24th, after a second blister,—feels rather better; no pain. On the 29th, complains of weakness and soreness, but no pain in the back; the feet are warmer. May 4th, after a third blister, much better; health improves; the blister has relieved the weakness of the back, and he can move the legs better, and their temperature is more natural. On the 11th, less weakness of the back, and he can move it better, and it gets less curved.

But although improved, it was evident he was not cured, and on May 25th it is said—He has no pain in the back, but he complains of some pain in the left side, which was about the lower ribs, and he has the twitching of the side occasionally. June 1st: Still complains of pain in the left side, but none in the back. No weakness of the legs; says his health is much improved. He wished for a blister for this pain, but looking at it only as a nervous pain, the cause of which was elsewhere, I contented myself with ordering a mustard-poultice. On the 3rd, however, the house-surgeon, at his own request, gave him a blister, which is now giving him some pain by its inflammation. Applied in this way, this remedy acts on the extremities only of the nerves, but yet they remove pain, as you see, by applying a blister to the painful and swelled knee, caused by disease of the hip. The other blisters were directed to the origins of the nerves.

Being now much better, I dare say he will shortly leave the hospital, so that you are not likely to see the real cause of his present condition, whether it be water or solid deposit, or softening, or only deranged circulation in the medulla, or whether it be some disease of the parts around the spinal marrow. It is probable that the symptoms will continue more or less for some time, and in some obscure cases like this the palsy or other affections of the parts deprived of nervous power will continue for many years, or

there may be intervals of some time, and then they return again after a year or two, but are not fatal at all, or not for many years. I expect a relapse, however, before very long. There did not appear to me to be any reason for depletion, nor has cupping or other loss of blood much power over the spinal marrow; it is sometimes right in an acute case with a full habit, but not in a chronic case like this, with the circulation weak. Neither did there seem to be any use in giving mercury; this remedy has but little power, compared with its influence on the brain, and its use, where there is suspicion of softening, is contra-indicated; the debility occasioned by it would be injurious instead of beneficial.

IV.— The next is a complicated as well as obscure and doubtful case.

Edward Warman, 55 years of age, was admitted under Dr. Nairne for obscure pain in the side and back, with rheumatism, and with some urinary symptoms also. He complained of pain around the loins and on the left side behind the lower ribs, and thence to the spine, and there was some tenderness of this part, but without any apparent fulness; and there was some weakness and inability to use the legs. He had pain in the bladder, and great difficulty in making water, which contained pus, but was slightly acid; there was also incontinence of urine when he was asleep, and the prostate, when examined by a catheter, was found to be enlarged, though not much, and there was some urine and pus retained in the bladder, as he could not quite empty it. He said he never had stricture or gonorrhœa. He was of a pale unhealthy countenance, and was much emaciated and depressed, and appeared to have some dangerous complaint.

He said the pain in the side and loins arose from a fall in last September, but the prostatic symptoms, so say our notes, only commenced two days before his admission, when he had two attacks of retention, requiring his urine to be drawn off; it appeared, however, afterwards that he had had slight difficulty in making water for a year, but the incontinence had only been a week, and the retention two days, and the difficulty of micturition was so great as to require the catheter to be used for a week after his admission. He had repeatedly been cupped and blistered without benefit. With this history and these symptoms, I was asked to see him soon after his admission The catheter showed some disease of the prostate, and the urinary symptoms were just such as the chronic enlargement of this gland occasions; gradually increasing difficulty in micturition for a year, till the mechanical obstruction occasions retention, and some water is always retained, and the urine dribbles away; the lodgment of some water, and straining, occasions inflammation of the bladder, and thence the purulent secretion of the mucous surface, with more irritation and some blood; at the same time, it did not appear likely that the pain in the side arose from renal disease subsequent to the disease of the prostate and bladder, since the

urine was still acid, while much disorganization of the kidney, with suppuration, generally makes the urine alkaline; this, on the contrary, was acid, and the pus most probably only from the bladder.

But then, besides incontinence of urine, which was apparently only from the prostatic disease, he had some loss of power over the lower limbs, with pain in the side towards the spine, coming on after an injury:—I could not find any sufficient pain or tenderness about the vertebræ to suppose that there was caries of the spine causing partial paraplegia, and there was no prominence whatever, and the pain and tenderness were all on one side of the spine, and to some distance from it, and yet, without any swelling or sign of local disease likely to cause so much ill health, he looked as if he was about to sink under the malady, of whatever kind it might be; there was suspicion of rheumatism, but nothing well defined, and he was too consistent in the account of his illness dating from the fall to make it probable that there was rheumatism of the spine. Regarding the case, however, as being more probably connected with the spinal marrow than with the parts around it, he was left under the physician's care chiefly, and as a variety of local remedies had previously been used without avail, Dr. Nairne watched the patient for a time while he took infusion of diosma and hyoscyamus to improve the state of the bladder, and a morphia draught to give him sleep, and opiate liniments to rub in for the pain. The catheter was also directed to be passed daily, to prevent any irritation of the bladder by lodgment of some of the water with the pus behind the enlarged prostate.

About a month afterwards, being nearly in the same condition, he was transferred to my care, and on May 4th, the notes say—He feels rather better, and has less difficulty in making water, which is acid and contains some pus; he has some incontinence also, and has pain in the loins, and pain and numbness of the legs, with great weakness of their movements. On the 10th, the instrument has not been passed for three days, the incontinence and difficulty of micturition being lessened, but when passed to-day a large quantity of pus was drawn off which had been for these three days settling in the bladder, and lodged behind the prostate, the clear urine only coming away when he made water himself. He gets weaker, and still has the pain in the loins and bladder. Urine slightly acid. He had no fresh symptom which looked like disease of the kidney, though some alteration and even suppuration often comes on with very obscure evidence for some time.

My attention was more directed, however, now than it had been before, to the spinal symptoms, by an aggravation of them soon after he was transferred to my care. On May 14th, it is said—He has numbness of both sides, from the anterior superior spinous process of the ilium to the knees, and entire loss of sensation from the knees to the toes, with complete inability to

move the legs; this came on last night, but there has been slight difficulty for the past week. There is incontinence of urine, which is highly alkaline and ammoniacal, and contains a good deal of pus. The 15th, he moved his legs partially in the early part of the morning, but still has the numbness of the legs; he complained of great pain in the region of the bladder this morning, and about a pint and a half of highly ammoniacal and purulent urine was drawn off; he complains of pain in the back, and seems to be much weaker. On the 16th, there is a variation in the account; he can move the right leg better, but has no sensation or power of motion of the left. On the 18th, there was a fresh symptom—namely, incontinence of fæces, and the urine was neutral. On the 20th, he can move the right leg, but the left only slightly; sensation is perfect in both legs; there is still incontinence of urine and fæces; abdomen tympanitic. On the 22nd, rather better; has a good deal of pain in the loins and back; sensations of both legs; only motion of the left one, which is the exact reverse of what was the case before; less incontinence of fæces; urine neutral. On the 25th, more motion and sensation of both legs, but he complains of pain in both iliac bones, which extends down the left thigh and leg. Has some pain in the bladder and in the back; no incontinence of fæces or of the urine, which is highly alkaline, and contains a good deal of mucus and pus. No rigours, but a good deal of fever. In some respects, then, he was improving; but this feverish attack made me leave off the wine and porter which he was taking, and apply a blister to the loins, which seemed to do him good, as on the 28th the notes say—Less pain in the side and loins, and he feels much better; less pus in the urine, which is neutral, which was the same the next day, when it was also noted that there was more power over the legs, and on June 3rd the urine was again acid, with less pus. But still he could not be considered as essentially better as to the spine, or in his general state, for on the 5th it is said—There is more aching in the legs, some pain in the left iliac fossa, the legs cannot be moved so well, and there is a small slough over the right ankle and on the left heel, and one on the sacrum, and he feels much weaker. I was obliged, therefore, with this evidence of deficient nervous energy, to return to some wine, having given him previously some porter, and the report yesterday, the 8th, is that he was improved, and had more sensation and motion of the legs, and that the sloughs were separating, and he had no pain in the back; he had still incontinence of urine, which was slightly alkaline, and contained less pus.

I may observe that he presented us with an example of the curious reasoning often resorted to. I wished to place him on a water-bed on account of the sloughing, but he refused; because he had seen some one die who had lain on one, he thought he must also die if he was changed from his present bed to the water-bed.

There has been, then, more complete paraplegia, both of motion and sensation, with pain and loss of nutrition, which came on somewhat suddenly, and has been very variable since, and the urine became suddenly worse, highly ammoniacal directly after the attack, and has only once been noted as acid since that time, though there is as yet no positive evidence of renal disease. We are, however, just as much in the dark, as at the beginning, with regard to the real cause of his illness. It appears to have no cerebral origin, for his mind has never been affected, and he has referred nothing to the head ; but what change may have taken place in or around the spinal marrow we cannot say. He was obviously very ill from the first, and does not seem now to be likely to recover, but, as in the last case, any organic change affecting the spinal marrow, directly or indirectly, would account for his paralytic symptoms.

But there is in this case a combination of disease of the urinary organs with impaired functions of the spinal marrow, and Mr. Stanley, whose practical remarks always deserve much attention, has published a paper in the Medico-Chirurgical Transactions, in which he relates some cases in which no apparent disease existed in the spinal marrow, though there were, as in our patient, symptoms of much loss of nervous energy, both motion and sensation being impaired; and Mr. Stanley supposes that this arose from disease of the kidneys; he imagines that irritation is conveyed from the kidney by its nerves to the spinal marrow, and that thence it is propagated in a reflected manner down the nerves, both of motion and sensation, arising from the spinal marrow, and passing to the lower part of the body. I was not convinced, however, of the truth of this, when I heard the paper read, nor have I seen anything since which makes me think that the opinion is correct.

It is well known that injuries and diseases of the spinal marrow influence the functions and structure of the kidneys, as for instance in the patient from whom I removed this fractured spine, who lived long enough to have the fracture united, after the fragment had been pressed in so as to crush the spinal marrow, causing immediate paraplegia and loss of sensation, shortly succeeded by alkaline urine, altered temperature of the limbs, which was 10 or 12 degrees above the natural standard, and impaired nutrition, and sloughing of the parts which had been deprived of nervous energy ; in him there was inflammation and sloughing of the bladder, and inflammation of the ureters and kidneys, which had numerous abscesses within their cortical structure. The same changes in the kidney are also constantly observed in diseases of the spinal marrow. And this effect of spinal disease upon the functions and structure of the kidney will come on very rapidly in some cases ; for example, a gentleman who was in perfect health to all appearance was suddenly seized, a fortnight only before his death, with paraplegic loss

of sensation and motion in the lower extremities, and then by sloughing, of which he died, and in the spinal canal was about three quarters of an ounce of water, and a portion of ossific matter in the membrane of the size of a pea, and there was much inflammation, not yet, however, amounting to abscess in the kidneys. I cannot help thinking, therefore, that this effect of spinal disease on the kidneys was probable in at least some of the cases related by Mr. Stanley, rather than the reflected influence of the renal disease upon the spinal marrow and its nerves.

I may observe, that nothing morbid being detected in the brain or spinal marrow after death, is no proof that there is no change whatever in their structure, for such changes are confessedly very minute in some cases, and in some of the instances brought forward there was in fact a little water, and vascularity, though it is supposed they were not sufficient to account for the loss of function in the nerves. Were the opinions well founded, it would seem necessary that the effect should be more frequently observed; you see many cases every year of fatal disorganization of the kidneys from stricture or diseased prostate, or uterus, or stone, but if you examine a hundred of them in succession, you will perhaps find no paraplegia resulting from the renal disease; and again in the medical wards you witness many fatal disorders of these organs, but no effect from them upon the spinal marrow. On the other hand, you never see serious organic changes of the spinal marrow without disorder of the function or structure of the kidney following them. And further, if disease of the kidneys occasioned reflected morbid action, we ought to expect that the same result would be constantly seen from disease of the uterus, or liver, or lungs, or other parts of the body, which has not been alleged.

Perhaps you may ask how it is, that in diseases of the spinal column, of which I spoke in a recent lecture and at the beginning of the present one, you do not see diseases of the kidney produced? The reason, however, seems an obvious one; namely, that caries of the spine affects the anterior part only of the spinal marrow in most cases, or at all events occasions no organic change in the spinal marrow. You may have much pressure and altered condition, such as in this preparation, where a cancerous growth projected against the spinal marrow, which is not above half its proper thickness at the part, but there was no softening or other change of structure, and therefore the effect on the kidney was only to make the urine permanently alkaline for many months, without any inflammation or sloughing; a fact moreover which shows that in the rapid changes observed in the urinary organs after injuries or tumours, or softening of the spinal marrow, it is not the alkalescence of the urine alone which occasions them, but chiefly the loss of nervous power, shown in them in the same way as in the external parts of the lower half of the body; and this influence on the kidney I

believe to be felt, along with the deranged temperature and lowered vital powers, not when the anterior part of the spinal marrow is disorganized, but when the change of structure has taken place in the posterior part.

Our patient, then, has, in all probability, some disease of the spinal marrow, or the parts around it, which will probably be fatal; but his disease of the urinary organs appears to have no direct connection with this affection of the spine, except so far that the alkaline state of the urine came on suddenly, when the paraplegia was found so quickly getting worse, and perhaps depended on the condition of the spine, which aggravated the already existing renal irritation, whether there is or is not any change of structure in the kidneys. I suppose we shall have an opportunity before long of ascertaining the truth.

V.—The next case which I will bring under consideration is one of paraplegia from a very different cause, and which is apparently only functional; it is the case of Mary Ann Searle, 20 years of age, who was admitted on the 11th of February. About seven years ago she was in the Exeter Hospital for some tumour in the right hypochondrium, which was removed, and she has a large cicatrix left by the operation, and also one of an abscess in the left groin. Seven weeks ago she hurt her back against the corner of a sideboard, which has disabled her from walking. On examination of the spine, her pain is referred to no particular part, but she complains of acute sensibility everywhere on the slightest touch; and she says that she is now, and has been for a fortnight, unable to pass her water without the catheter, and that seven years ago the same thing happened. She has no power of lifting her legs from the bed, and sensation is also somewhat impaired. The catamenia are always irregular; they occurred two months ago, and not for three months before that. Bowels much confined. Leucorrhœal discharge. Urine healthy.

Here, then, was a disturbance of several functions of the body, and entire want of power over the bladder and lower limbs, both parts of the spinal marrow being affected, so that sensation as well as motion was impaired, and there could be little doubt, from the extent and peculiarity of the pain, and the calmness of the countenance, and the general history, that the paraplegia was what is termed hysterical; there was an absence of voluntary exertion, and a deficient nervous energy in the parts affected; and there is generally, also, a degree of weakness of the circulation. You must, therefore, be very cautious how you adopt any measures which lessen the vital powers still further in such cases: for example, I remember a young woman who was admitted into the hospital, under Dr. Seymour, with hysterical paraplegia, and who had, unfortunately, been bled somewhat largely before her admission, the consequence of which was an immense slough, of which she died, and from all threatening of which our patient has been free.

But this girl received a blow on the back, which was the immediate cause of the symptoms under which she laboured; might it not be, then, that there was, in fact, some serious injury, to which the hysterical symptoms had been superadded, so as to obscure the case, and conceal its real nature? Now this constantly happens, and is a source of much difficulty in diagnosis, and in the treatment of many cases; some injury or disease exists, but the acute pain and sensibility of the parts masks and obscures the ordinary signs, making the case appear much worse than it really is, or causing the actual local disease to be overlooked. There is little difficulty in any case where it is purely hysterical in satisfying yourselves that the case is almost entirely of this nature, but it is not so easy to be quite certain that there is nothing else added to the hysteria. Our patient sleeps well, and looks calm and placid, and the pain was felt along the whole length of the spine, though it was greatest at the seat of the injury. A young woman was under my care, however, who was keeping house alone for her mistress, when a gentleman called, who attempted to be very rude, or worse, to her, and she was thrown against the edge of the stairs, and hurt the lower part of the back of the neck; the consequence of which was very acute pain confined to this one spot: she could not sleep, and had an anxious expression of countenance, and a quick pulse, and impaired health; yet, although these circumstances looked very like local injury of importance, I believed she was only thoroughly frightened, and simple means directed to her hysterical state of system got her well before very long.

Wherever there may be reason to entertain any doubt whatever of the existence of local disease with hysteria, I recommend you to be cautious how you decide that there is none, and adopt such measures as would be likely to aggravate the local affection. A paper was published by Dr. Wilson, of the Middlesex Hospital, in which he recommended for cases of hysteria simulating diseased joints, that the person should be placed against a wall, and supported by the nurse and some assistant, and then have the sound leg removed from her, so that the weight was obliged to be borne by the hysterical one; but a mistake in such cases would be of vast importance. I once saw a young lady, the daughter of a medical man, and Sir Benjamin Brodie saw her also with me, who had suffered for some time with painful affection of one hip, which was most acutely sensible to the touch, and we satisfied ourselves that the case must be an hysterical one, and recommended exercise with other measures adapted chiefly to hysteria, which was done with much perseverance, and with no little distress to their feelings, by the friends, on account of the pain; and for six months we flattered ourselves that the case was in the way to be cured, for the patient was able to walk about and enjoy herself, and her health improved considerably; in a year's time, however, she died with abscesses about the hip, and destruction of the

head of the bone: doubtless, then, there had been some disease at the time we saw her, but completely masked by the severity of the hysterical symptoms.

Let us now see what has been the line of treatment for our patient. First, then, she was kept quiet for a time, to avoid the chance of an error in the diagnosis by the first examination, and afford the opportunity of watching her more accurately. She was obliged, at first, to have the catheter passed to draw off the water; but it was only allowed to be done when absolutely necessary from distension of the bladder: a moderate degree of pain will make the patient endeavour to evacuate the water, encouraged to contract by cold water dashed against the abdomen, who would be passive, if it was permitted, for years, so that at last, perhaps, the power over the bladder might not be regained at all. I have known the action of the detrusor return after more than a year, but it has been sometimes found to be permanently lost; after some time, however, you must not run the risk of the bladder bursting or inflaming, and sloughing, from over distension. The notes say, on the 24th, that she passed her water yesterday morning of her own accord, but not since; and on March 3rd it is stated that she passed her water without assistance on the 28th, and has continued to do so since; in fact, she has had command over the bladder up to the present time. Some aloes and assafœtida was at first given three times a day; and fœtid medicine will occasionally do good, when so taken, or when used in enemata; she has also required the constant use of purgatives, and she is now taking as much as ten grains of compound aloe pill with some scammony every night, with very little effect; injections also have been often used, and regularly, but the abdomen is often tumid and hard from the torpor of the bowel, which is of the same kind as the palsy of the bladder, and from loss of power over the abdominal muscles, corresponding to that of the extremities. On the 21st, a few days after her admission, satisfied that the case was in all probability unattended with disease of the spine, she was taken out of bed, and a shower-bath administered daily, which is very useful in hysterical cases, particularly if the patients do not like it, and it has been employed nearly constantly since that time. On the 27th steel was given with her aloetic medicine, and she has taken it a considerable time since, leaving it off when menstruating, which she has done twice, I think, though irregularly; and lately I have given her bark instead of steel. In by far the greater number of hysterical cases some tonics are required, especially the metallic tonics, and it is very seldom that any depletory measures are useful or proper. It is said, sometimes, that these cases are instances of spinal irritation, and cupping and other lowering measures are employed, but the number of patients who are of full habit and florid complexion is very small, and it is to them only that cupping to a small amount,

on the sacrum or spine, is useful, especially if the irregularity of the function of the uterus is attended with pain ; in which cases our continental practitioners would employ leeches to the uterus or pudenda more often than is done in this country.

I threatened, for some time, to use a large blister, which sometimes drives away the pain in the back; and once or twice, when it has been much complained of in this case, I have ordered one to the loins; I only use them when the pain is obstinate, as they confine the patients to bed, but they are very efficacious, if they become necessary. She was very soon encouraged, and in some measure forced to be up, being placed on a chair or table to try and move her legs, and crutches were at last capable of being used, which she could not do till she had been held up, and induced to try to walk by the nurses. By slow degrees she has in some measure improved, but it has been very slowly and imperfectly. The notes on March 9th say that she tries to walk a little, which was with the assistance I mention. On the 23rd it is observed that she cannot lift her feet from the bed. On April 9th, the legs ache a good deal, but she cannot make the least use of them. On the 13th she is better, and can move the legs better, but they are painful at times. May 1st, is gradually getting better and stronger ; but on the 11th it is stated she has lost the sensation and motion of the right leg, but the left leg is much improved, and in this state she now remains, able to walk feebly by the left leg, with crutches, but without any power over the right, which she drags after her, and cannot move the leg, or foot, or toes, nor do they start at all when pinched, sensation not being wholly lost, though much impaired. She has latterly had the limb galvanized, but hitherto not with any benefit. Her general health is improved a good deal, but the bowels are exceedingly torpid, and the uterus does not perform its office ; it will, perhaps, therefore, be a considerable period before she is perfectly recovered from her paraplegia.

[*Medical Gazette*, vol. iii., new series, p. 133.

June 23rd.—A fortnight since I brought under your notice one or two cases of paraplegia, and among them that of Edward Warman [see *ante*, p. 428], who seemed to be then dying of some fatal affection, and I told you that I thought it probable that the paraplegia arose from some disease in or near the spinal marrow, but whether it was softening of the medulla, or some new formation pressing on it, or of what nature it might be, I could not say, as we only had the evidence of deranged functions, which might be equally impaired by many different causes. After that time the patient had little change of symptoms. On June 15th it is said he is much the same ; the slough has come away from the back, but not quite from the ankles ; the urine contains less pus, and is slightly alkaline ; there is rather more

incontinence of fæces. On the 19th he seems to be much weaker, and is very low; there is incontinence of urine and fæces; no motion in the legs, but sensation is perfect in both; urine neutral, or nearly alkaline, and containing very little pus; then he gradually sunk, and died at half-past eleven on the 21st, and I examined the body yesterday. I will read you the account in the register.

Body well formed, but emaciated, with slight œdema of the lower extremities; large sores over the sacrum, heels, trochanters, and malleoli; the sore on the sacrum was the only one where the whole thickness of the skin was destroyed. Putrefaction already far advanced, especially about the abdomen, neck, and back part of the trunk, where the skin was of a dark green colour.

A small quantity of turbid fluid was found both in the subarachnoid cellular tissue and in the ventricles of the brain, but no diseased appearances could be detected about the structure of this organ, notwithstanding a minute examination. Some clear serum was found in the subcutaneous cellular tissue of the loins, and a quantity of blood-tinged serum was found in the lower part of the theca vertebralis, but no diseased appearances could be detected in any part either of the spinal cord or its membranes; the structure both of the spinal marrow and brain were somewhat advanced in decomposition. A few old adhesions existed on the left side of the thorax, and a small patch of tubercular matter was found in the apex of the right lung. Both lungs were emphysematous at the fore part, and loaded with red frothy serum at the back part. The heart was healthy as well as the valves; some patches of atheroma existed about the root of the aorta; some small loose coagula were found in all the cavities, the lining membrane of which was slightly discoloured.

The liver, spleen, and intestines, presented nothing remarkable; both kidneys were dark coloured and congested, the left being larger than natural, but no morbid deposit was found in either of their structures; the mucus membrane of both pelves of the ureters was quite healthy. The bladder was thickened, and somewhat larger than natural; the muscular structure was hypertrophied, and strongly fasciculated, forming large bands projecting into the cavity of this organ; the mucous membrane was thickened, and of its natural colour, except in the verumontanum, where it presented an ecchymosed appearance. In the left lobe of the prostate was a cavity of the size of the end of a large bougie, perfectly smooth, and communicating with the urethra by an opening which passed off at right angles from this canal; there was no ecchymosis in the structure of the prostate, which was otherwise healthy; this cavity in the prostate contained some foul matter.

The post-mortem examination has been, then, very unsatisfactory, as it so

often is with regard to the cause of paraplegia ; particularly so in this case, in consequence of advanced putrefaction arising from the unprecedented state of the atmosphere at the time of the patient's death, which makes it difficult to decide whether there had been any softening previous to death, or not, either in the brain or spinal marrow. The quantity of fluid in either part is also influenced by the same cause, and probably had we seen the examination without knowing that there had been paraplegia, we should have said that there was no important alteration of appearance. If it be so, and I think the softening and morbid deposit of serum must at any rate have been very trifling, you see the truth of what I told you, that the absence of any discovered cause of palsy is no proof that there may not have been some alteration that we are incapable of detecting with the eye ; and the putrefaction prevented any use of the microscope.

There was no sign whatever of any effect of the injury he described, nor was any reason apparent for the constant pain in the left side, which may, therefore, be referred, in all probability, to the same lesion, whatever it may be, of the nervous system, which occasioned the loss of power and sensation and nutrition in the limbs.

There was not much enlargement of the prostate, nor did we expect much, the difficulty of expulsion depending in many cases not upon the absolute size, but on the relation it bears to the natural form and course of the urethra through it. The cavity in the prostate was supposed by some to be a false passage made by some one of those who passed the catheter for him ; I think it was not so, however, but was a small abscess, such as often forms in this gland, because there was, I understand, scarcely ever any impediment to the easy passage of the instrument, and also because it communicated at a right angle with the urethra, and had a smooth lining with an obtuse end, instead of being a kind of continuation of the urethra at a more or less acute angle with the posterior part of the canal, with a ragged surface in its interior, which is generally the case where a new passage has been made by force.

The incontinence and retention of urine and purulent secretion, besides being probably antecedent to the injury, were clearly owing chiefly to the disease of the prostate, as the fasciculi of the bladder were enlarged considerably from the increased attempts to overcome the obstruction of the passage of the water ; and the absence of any considerable inflammation of the bladder, and the healthy condition of the kidneys (not yet affected as they would have been in time if the obstacle had continued), leave us nothing to account for his death, except the gradually weakening effects of the paraplegia.

You will remember what I said to you regarding Mr. Stanley's theory, of paraplegia being caused, without organic change in the spinal marrow, by the nerves of a diseased kidney, so as to impair the functions of the nerves

of the extremities. The examination of Warman seems to be a good example of the fallacies which all of us are subject to in reasoning on medical subjects. We have seen that there was no renal disease; but suppose we *had* found abscesses or other disorganization of this organ, which might easily have been the case from the two causes which were in operation, viz., the disease of the prostate, which always affects the kidneys at last, and the impaired functions of the spinal marrow, which would also have probably occasioned disease of the kidneys, if the patient had lived long enough for the sensitive portion of the spinal marrow to have become as much affected as the motory; in such a state of things Mr. Stanley might naturally have said, here is exactly what I have written to assert the existence of, a disorganized kidney with paraplegia, without sufficient disease in the spinal marrow to account for it; it is, therefore, a functional disorder, propagated, as I have said, to the nerves from the kidney. In the absence of renal disease, however, in Warman, we cannot resort to this explanation of the paraplegia, and we are obliged to acknowledge that paraplegia cannot always be traced to its cause, or else to carry on Mr. Stanley's reasoning analogically to the disease of the prostate, as the cause of the functions of the spinal marrow being disordered, which appears, as I told you in a former lecture, to be contradicted by the fact of your seeing a hundred cases successively of fatal disease of the prostate, and of the bladder and kidneys, following the prostatic disease, without once seeing it conjoined with paraplegia.

[*Medical Gazette*, vol. iii., new series, p. 309.

CLINICAL REMARKS ON INJURY AND DISEASE OF THE CERVICAL VERTEBRÆ.

May 25th, 1847.

1. Cases of Injury of Neck resembling Dislocation of Vertebræ.—2. Chronic Disease of Cervical Vertebræ.—3. Bone lodged five weeks in the Œsophagus.

GENTLEMEN,—Disease which affects the *cervical* portion of the vertebral column is somewhat different from that which affects the lower parts. Disease in the neck is not unfrequently of an acute character, and, if unchecked, ends quickly in anchylosis. You will find a numerous collection of cases of acute inflammation of the articulations of this portion of the spine, both of the two first vertebræ and those lower down, in a paper by Mr. Lawrence published in the 17th volume of the Medico-Chirurgical Transactions; it contains cases published by Rust and others of accidents and diseases of these parts, as well as those seen by himself, and you will do well to read it with attention.

In some cases of disease of the neck the external parts alone, or the several textures of the spinal column, are affected, without the nerves or spinal marrow being in any way implicated; in a second set the inflammation may attack the external parts, and the nerves may be locally affected; in a third the spinal marrow itself may be implicated; and in a fourth the functions of the brain and cerebellum may be so disturbed that death may ensue from the participation of these parts in the disease.

Again, supposing inflammation to be confined to the articular surfaces, it may affect only the bones below the dentata, in which case anchylosis does not interfere with the rotatory, or nodding motions of the head; or it may affect only the two first bones, in which case these movements are quite destroyed; or it may implicate several joints in both those parts with proportionate immobility if recovery takes place.

It is not, however, my intention to bring before you to-day the most common affection of this part of the spinal column, namely, scrofulous caries of the bones; but you may easily learn how serious the disease may become by the formation of abscess interfering with the processes of deglutition and respiration, by looking at the preparations, or by reading Mr. Lawrence's paper, to which I before referred you, and I should recommend you to compare the observations in it with those I am about to make upon two or three cases which have lately been under your notice in the hospital.

I will first speak of an acute case which will not unfrequently come before you, and which is liable to be thought of a more serious nature than it really is.

David Cecil, æt. 15, was admitted, on March 11th, into Wright ward, and our notes tell us that, on his admission, "the head was very much inclined towards the left side; the sterno-mastoid muscle of the opposite side was very tense, and he had no power of moving his head one way or another. He states that a man put a load of hay on his head this morning, and this being too heavy for him, it forced his neck into its present position."

A child came under my care who had been turning head over heels in bed, and in this case the distortion was so great that it put on exactly the appearance of the dislocation described by Chopart, Desault, and others, in some of whose cases a person, by twisting his neck suddenly, became immediately unable to move it; the head became drawn to one side, and an appearance was produced exactly similar to the distortion which would have existed if a displacement of the bones had actually occurred. In the majority of instances, however, nothing more than a strain of the ligaments exists, and the deformity and inability to move depend upon the inflammation and swelling, and the reluctance of the patient to make an attempt to change his position on account of the pain the attempt produces. In the case before you, you saw that the treatment adopted by the house-surgeon was most

efficacious. He had—Hydrarg. Chloridi, gr. iij. statim ; Haust. Senna postea ; Hirud. xij. cerv. applic. ; and on the next day the "neck was not nearly so stiff."

On the 14th, the notes say "He can move his neck very well :" and,

On the 15th, "He was discharged cured."

Sometimes similar cases will last much longer without yielding to remedies, and in some of them dislocation may possibly have taken place, though there is no positive certainty that a dislocation really existed in most of the published cases. In some cases a fracture may have occurred of a nature which this preparation will illustrate. The patient from whom it was taken fell from a loft to the ground—a distance of twenty feet. He fell upon his head and shoulders, and in consequence, you see a portion of one of the articular processes of a cervical vertebra broken off, and the bones allowed to become displaced. He had paralysis of the parts below the seat of injury, and died a few days after the accident. There is a case quoted by Mr. South, in his edition of "Chelius's Surgery," in which the surgeon made two unsuccessful attempts to reduce a supposed dislocation of the vertebra in this region by making extension and counter-extension. In a third attempt he succeeded in producing an alteration in the position of the parts, and their return was attended with a noise as when a dislocated bone slips into its place. The snap was not loud, however, and perhaps resulted from the readjustment of the parts of such a fracture as this one before you, and not really from a dislocation.

When the case is of the nature of the one you saw in Cecil, you may promise a speedy cure by the application of leeches and cold lotions, and, in the more severe cases, blisters which you will sometimes find it necessary to employ, and you need not expect the permanent distortion which would follow a dislocation.

An accident of the same nature as that of Cecil, but of a more chronic character, will occasionally come before you ; and you have an instance in a man who was admitted under my care in August last, named John Barker, æt. 45. Our notes for the 28th of that month tell us that "he fell from the top of some steps, and a pail lodged there fell on the back of his neck. The parts covering the neck, from the third to the sixth cervical vertebræ, are tense, swollen, and inflamed ; any movement of the head causes pain, although this is not entirely owing to the present accident, he being liable to occasional attacks of stiffness and pain, in consequence of a kick from a horse, two or three years ago," which circumstance, you will observe, complicated the case to a certain degree. He was ordered Hirudines xviii. parti dolenti ; Hydrargyri Chloridi, gr. v. statim ; Haust. Sennæ cras mane. What was chiefly noticed in this case was the very acute nature of the pain, which was so severe as to prevent his sleeping.

On the following day we find, "has not slept at all, on account of the severity of the pain." On his admission, he complained of a want of sensation in his fingers, particularly of the left hand; sensation has now in some measure returned, but the fingers are still slightly benumbed. ℞ Ræ. Opii ℥xx.; and such notes as this continue:—

Sept. 2nd.—"Cannot sleep without laudanum, which has been taken every night, the pain being so severe."

6th.—"Pain keeps him awake the greater part of the night, extending from the neck to the fingers of the left hand."

He was put under the same treatment as Cecil; leeches to the tender part, afterwards blisters, which were kept open, and opium was administered in sufficient quantities to procure sleep; he was ordered to rest as much as possible, but, as you might have observed, it was very difficult to keep him quiet; and this you will often find to be the case.

On September 23rd, he left the hospital, in opposition to my advice, but was again admitted on the 28th, with a fresh attack of pain in the back of the neck; he was placed under the same treatment, still, however, continuing very restless. The blisters, and other remedies, were repeated, and under them he gradually improved (still complaining, however, of numbness of the arm and fingers of the left side), until the middle of November, when these symptoms also went away, and he left the hospital.

In a case of this sort, of so severe a nature, and of such long duration, the patient ought, of course, to have remained quiet and at rest for a considerable time after the cessation of the pain and other symptoms; but he would not do so, and, consequently, six weeks afterwards, on December 2nd, he again presented himself, with a return of all the symptoms, and was readmitted into the hospital: after a repetition of the treatment, however, the disease was subdued, and he left on January 7th, at his own request, being much relieved.

I had a man under my care, many years ago, who was suffering from the effects of a somewhat similar accident; he had fallen from a height of ten feet, and was admitted twelve months after the accident. In him there was a greater affection of the spinal marrow, more numbness and palsy of the arms; ten months after the accident, the lower extremities also became affected, and the sphincter muscles of the bladder and rectum paralyzed, so as to be unable to retain their contents; he was subjected to the same treatment as the two patients you have seen, and he left the hospital nearly well.

It is doubtful, in such chronic cases, whether there may not have been some slight concussion or bruising of the spinal marrow, with possibly partial fracture of the bones; or effusion of blood among the nerves, or into the spinal canal, so as to affect the lower as well as the upper extremities. Still,

although the case *may* terminate in anchylosis, or even in the death of your patient, you have a very good chance, in many cases, of effectually removing the effects of the injury by appropriate treatment.

I will now pass on to a third case, and I will first relate to you the latter part of the case, as the best method of illustrating the points to which I wish to draw your attention.

William Smith was admitted on May 5th into York ward; and our notes say "that shortly after he left the hospital on March 10th, he caught cold, accompanied by pain in the chest, increased on inspiration, and slight cough, with mucous expectoration; the pains in the shoulders, which were not quite well when he left the hospital in March, increased in severity; the pain in the chest sometimes left him, and then returned after a short interval."

About the same time, with these symptoms, he perceived a stiffness in the neck so that he could not bend it without great difficulty and pain, though he was able to rotate it perfectly. There was much pain in the neck, varying in its character, being sometimes dull, and at others pricking and lancinating. He perspires greatly at night, but has had no rigours. Soon after the pain came on in his neck, his limbs started at night just as he was going to sleep. On his admission all these symptoms were present, but were rather increased in severity; the pain in the shoulders and arms sometimes preventing him from sleeping. There is dull pain, corresponding to about the region of the seventh cervical vertebra, upon pressing the head vertically downwards. There is slight impairment of voluntary motion and sensation in the arms. His head is always bent down on his chest, so that the chin nearly rests on the sternum, and he moves his head by putting up his hands to support it, and is in fear of pain while doing so. There is more prominence than natural about the lower cervical vertebræ. He has no difficulty of swallowing. Countenance anxious, and he looks out of health. Feels very weak, and trembles much; tongue white; pulse natural.

Such was his condition when he was admitted this last time into the hospital, and the symptoms you would at once assign to disease, either of the bones or of the intervertebral substance, in the cervical region of the spinal column. Of the cough, expectoration, and pain in the chest, I will speak presently. The great stiffness of the neck shows that the lower vertebræ are affected, and the power of rotating the head remaining unimpaired is evidence that the joints between the two first vertebræ are not implicated in the disease. The great perspirations he has had, made me look for the formation of matter, though perspirations without rigours are not conclusive evidence of its existence. He has had, as you may have observed, starting of the extremities, occurring just as he was about to fall asleep, a symptom showing that the spinal marrow is in some manner irritated by the adjoining disease. The pain in the chest, and in the shoulder and arms, was very

severe after his admission; the prominent nature of this symptom, in similar cases, often leads to the disease of the vertebræ being overlooked, and the case is treated as rheumatism or neuralgia. It is the source of the same error when the disease occurs at the lower part of the spinal column. The pain, referred to the terminations of the nerves, is complained of as affecting the chest or abdomen, and the attention is directed to the lungs, the liver, kidney, or other viscera, while the true nature of the case remains unsuspected.

The dull pain of which he complained, when the top of the head was pressed upon, is often a characteristic symptom of ulceration of the intervertebral substance. The disease is, of course, essentially, of the same nature as when the cartilage of a common joint is affected; and, as you know, exquisite pain is produced in this latter disease by pressing the joint surfaces together. If, therefore, in the examination of a patient with suspected disease of the bones or cartilages in the neck, you find that acute pain is produced by pressing the head vertically down upon the vertebræ, carefully abstaining from bending the neck, or from rotating the head, you may be almost certain that there is ulceration of one or more of the intervertebral substances present.

You will observe it stated, that in our patient there is a considerable prominence at the back of the neck; this is, no doubt, in a great measure, if not entirely, caused by the bent position in which the patient keeps his head, and not to loss of substance in the front of the spinal column, or dropping downwards of the articular processes which may be present in some cases of this disease.

These two symptoms,—the pain, and the position of the patient, are frequently observed when ulceration exists. The reason is not clear why patients affected with disease of the cervical vertebræ should keep, as is nearly always the case, the head bent forward on the chest: there is no reason why they should not bend it backwards, as, the bodies of the bones being affected, that would appear to be the position most likely to be attended with ease by removing pressure. Instead of this, however, it is observed that the muscles at the back of the neck lose their power of supporting the head, and thus the chin is allowed, by its weight, to fall forwards on the sternum. There is, you will also observe, great anxiety of countenance, to a remarkable extent, indeed: he looks out of health, far more than the disease would be sufficient to account for. This anxiety of countenance, with the other symptoms I have enumerated, are sufficiently characteristic of the disease. The treatment you have seen adopted is such as you will generally find necessary and useful in these cases. Perfect rest of the diseased part is absolutely necessary, but you will generally find it very difficult to persuade these patients to keep quiet. The position should be

horizontal, with the head supported on a pillow, neither very high so as to bend the head forwards, nor so low as to allow it to hang backwards, but of such a height as to keep the bones in their proper position; and this you will find to be the one most comfortable to your patient. It is difficult to keep the neck quiet, even when the patient is in bed, because such movements of the body as are necessary, are not attended with corresponding movements of the head; and this latter is often moved round while speaking, or turning to take food or medicines, while the body remains quiet. He was cupped to a few ounces on two occasions; morphia was given to procure rest; he had a mixture also for the cough, and a blister was applied to the neck, and kept open. Under the use of these remedies, our notes for the 28th tell us, he was somewhat relieved.

Here, then, the patient seems clearly to have been admitted with a disease of the intervertebral substances, not the result of an accident, but arising either spontaneously, or (and this brings us back to the commencement of the case) in connection with the following circumstances?—He first presented himself at the hospital on January 19th, and was admitted into Cholmondeley ward: he then stated that "three weeks ago he swallowed a fragment of mutton bone, which had remained in his throat ever since. A probang was passed the day after the accident, by a surgeon in the country, without any benefit: at the end of a fortnight, a probang was again passed. Previous to this time he had swallowed fluids only, but after the second passing of the probang, he could swallow small pieces of fat, and other soft food. For the first fortnight the pain was very severe, but is now less so, and is chiefly referred to a spot just above the sternum; has much expectoration; has lost flesh lately."

Bougies and forceps of different sizes were passed two days after his admission, and an imperfect sensation felt as of the bone just above the sternum; but the bougie passed beyond the part nearly to the stomach; mucus and a little blood came away on the instruments. This pain and distress were all referred to one spot, which was tender, across the neck, close to the sternum; tenderness and pain were nearly equal on both sides of the trachea, but perhaps more on the right, where the sensation above mentioned, was experienced. There was also slight fulness in the same part, but scarcely, if at all, greater on the right side than on the left: a mustard poultice was ordered to the tender spot.

In this case you see there was a history of a bone having lodged in the œsophagus, and remaining there for a space of three weeks. Now, a man who has, or believes he has, a foreign body in his œsophagus, will present, in any case, a subject for anxious consideration; and, in the first place, the question arises, whether the sharp irregular bone, in passing down into the stomach, might not have produced some degree of laceration, and so the

consequent inflammation give rise to a sensation at that part, the same as if the foreign body were still there; this is not an unfrequent occurrence, and the application of leeches and a poultice, succeeded perhaps by mustard poultices, or a blister, may be required to prevent ulceration, and the formation of abscess by the side of the œsophagus. But three weeks is a longer time than you would expect these effects to remain, unless something more than a mere bruising or laceration had taken place. I need not tell you that, in by far the greater number of cases, a foreign body, once in the œsophagus, will pass into the stomach. There naturally exists some degree of constriction about the situation of the cricoid cartilage, the ring of which being perfect, renders the œsophagus capable of a less degree of dilatation; but if the body have once passed this, there is nothing in the tube itself to prevent its generally passing on into the stomach. In consequence of the source of fallacy from laceration I before alluded to, and of the improbability of a substance remaining impacted so low down, no operation can be thought of unless there is positive evidence that it really is there, and only gentle and judicious attempts must be made to push down or extract the body supposed to be lodged, lest such attempts themselves occasion further mischief. Any foreign body will generally pass on, but still cases may occur attended with much risk and danger. Here is a piece of bone which lodged in the œsophageal canal. Ulceration took place, and an abscess formed, which, bursting into the mediastinum, produced inflammation of both pleuræ, and terminated in death. The patient, indeed, was a quadruped, but the same thing happens also in human patients.

Very nearly at the same time that Smith was admitted, there was a patient in the Middlesex Hospital, in whose œsophagus a foreign body had lodged, and the question of the propriety of performing œsophagotomy was considered. There was not thought to be sufficient certainty of its presence to warrant the operation, and the patient died from exactly the same cause as the dog from whom this preparation was taken.

You may remember that in Smith's case a consultation was held on the 27th to decide whether any attempt to remove the bone should be made, and an instrument was passed as before, but the bone could not satisfactorily be felt, and the symptoms were not considered sufficiently urgent in themselves to justify an operation. Our notes for that day tell us, that "the fulness and tenderness were almost gone,"—the mustard poultice having been applied twice, and some leeches were ordered after the consultation, which prevented a return of these symptoms.

It was determined then not to perform an operation which is both difficult and dangerous. You may perceive some of the difficulties you would have to contend with, by performing it upon the dead subject, but you may be sure that it is much more so in an operation on the living. You may judge from

the following eircumstance also. A very distinguished anatomist once tried to perform œsophagotomy for the relief of a patient with seirrhous strieture of the œsophagus, but the injeeted fluids passed into the anterior mediastinum instead of the stomach, and of eourse the patient died.

Our notes for the 29th are,—" Swallows more easily ; some pain in ehest ; sounds of heart unnaturally loud on right side."

On the 30th, " Pain in ehest more severe. 4 P.M., whilst taking some tea, he tried and sueeeeded in swallowing a pieee of crust of bread, whieh foreed the bone from its position, as it was distinetly felt to pass into the stomach, after whieh he eould swallow as well as ever." He took some eastor oil at his own request, to help it onwards I suppose ; and on the following day, we find "pieee of bone has been passed by the reetum :" and this fragment of mutton bone, about two-thirds of an ineh long, was presented to me. I made careful inquiries in order to ascertain that no triek (as some persons suspeeted) had beeu played, but I found that nothing of the kind had been in the ward, and I have no doubt that his aeeount is eorreet. He has never eomplained of difficulty of swallowing since, and has now no soreness in doing so, so that it would have appeared that all the symptoms had been owing to the aetual presence of the bone, and that it had remained there five weeks without producing any abseess. But about this time some other symptoms appeared, whieh had existed obseurely before, but had not till now been well marked. Our notes tell us, "it was not till after the sensation by the patient of the bone passing on the 30th, that the pain became very marked in the ehest. It extended aeross the upper part like nervous pain. Expeetoration of mucous eontinues as before, but there is no eough. The sounds of respiration natural, exeept that the heart is audible on both sides of the ehest. Heart's sounds natural. No pain on the fullest inspiration."

The pain produced some obseurity. He was seen by the physieian, in ease there should be any disease of the lungs going on, but these organs were found healthy. I watehed him carefully lest an abseess should be forming, but there has been no appearanee of matter ; and from this time, our notes inform us, he gradually improved.

On February 19th, we find "pain in chest eontinues ; chin somewhat depressed upon the chest ; pain in neek on elevating the head ; no pain on inspiration."

On 24th, "some pain eontinues, chiefly in the left side of the ehest."

On 26th, "less pain in neek on elevating the head."

On Mareh 5th, "eomplains of rheumatie pains about the shoulders and aeross the chest. Can raise his head without pain, and ean swallow without pain or diffieulty." And on the 10th he left the hospital apparently nearly well.

But as the case proceeded, you see a new set of symptoms (with whieh I

commenced) became developed, indicating disease of the cervical vertebræ, and consequently there can scarcely be any doubt that these curious symptoms depended upon some real disease just commencing at that time, but which appeared to arise from irritation excited by the bone.

And now two or three interesting questions arise. First, the bone being lodged, and abscess being liable to form between the œsophagus and spine, did the presence of the bone give rise to disease, and were the symptoms not only indicative of such disease of the vertebræ having commenced, but actually the result of the lodgment of the bone? I am inclined to think not. No difficulty of swallowing remained after the bone passed down, as would have been the case if ulceration had taken place in the tube, or if abscess had formed. Neither did any pain remain in swallowing. A lady who was under my care with an abscess in this situation suffered such pain and inconvenience that she was almost entirely unable to swallow, or even to breathe freely. Neither of these remained in our patient after the bone had passed on.

Again, it might be supposed that the disease, commencing in the spine, had given rise to the whole train of symptoms. Affections of the cervical vertebræ, both acute and chronic, sometimes occasion derangement of the function of deglutition, and the bone might become fixed, in consequence of the impaired muscular power. It is a possible suggestion. A woman came under my care, believing that she had a piece of meat sticking in her œsophagus. On examination, I found a malignant stricture, which had probably existed for some time, and which had been indicated by no symptom until irritated by the passage of a morsel larger than usual. In this way it is possible that the disease might have commenced in the vertebræ, and been aggravated and made more active by the lodgment of the bone. But, on the whole, it appears to me most probable that the lodgment of the bone and the disease of the spine were unconnected. You will do well to watch the case. Much will depend on the local effects of the disease,—much on the effect it may have on the system. It will be weeks or months before it can be cured, and will not improbably terminate fatally. [This patient continued under treatment till October, when he left the hospital, apparently cured.]

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END OF VOL. I.

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